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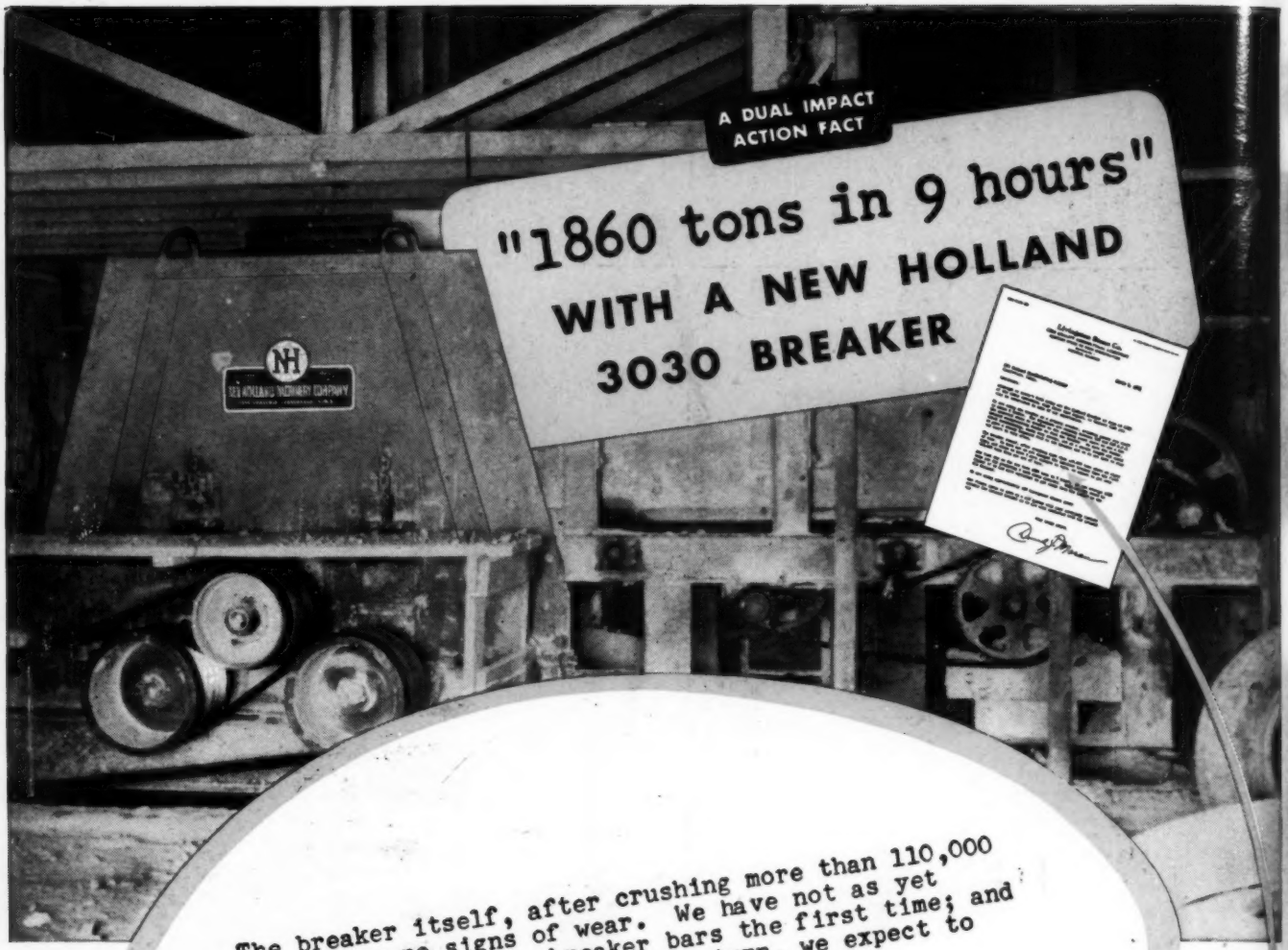
PIT AND QUARRY

JANUARY 1948

Partial View of Exhibits at 1942 Gravel and Stone Conventions.

In this Issue

Reviews and Previews of the Nonmetallic Minerals Industries • Present Status and Future Prospects for Highway and Building Construction • Programs of Sand and Gravel, Ready Mixed Concrete, Crushed Stone and Agstone Conventions



The breaker itself, after crushing more than 110,000 tons shows no signs of wear. We have not as yet changed the impeller breaker bars the first time; and since we have 3 more corners to turn, we expect to get over 500,000 tons from one set of bars.

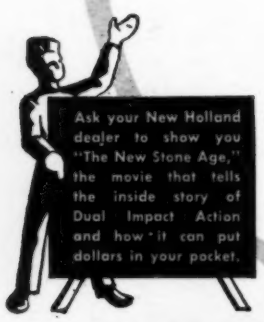
Our best day so far has been 1860 tons in 9 hours. We can average 1700 tons per day producing 2" minus material. This average would be higher if we had more equipment to get stone from the quarry to the New Holland.

We are using approximately 150 diesel horsepower.

Our future plans to open up a new quarry will most certainly include another New Holland breaker as we are very well satisfied with our present one.

Very truly yours,

David J. Moran

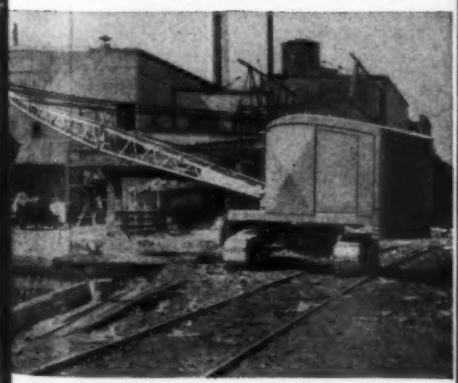

Ask your New Holland dealer to show you "The New Stone Age," the movie that tells the inside story of Dual Impact Action and how it can put dollars in your pocket.

NEW HOLLAND MANUFACTURING
Mountville, Pennsylvania

swing

In close quarters, trucks often can't be spotted for short swing. High swing speed of Koehring 304 cuts swing time approximately 20%, gets extra yardage every shift.

Highway work where shovel swing radius often is longer than 90 degrees, calls for high swing speed. On jobs like this, Koehring 304 can step up production 5 to 10%.



Shifting back to standard swing speed, when you're working Koehring 304 as clamshell or crane, takes only 2 seconds. You can select best swing speed for each front end attachment for any type of work.

MILWAUKEE 10, WISCONSIN

Johnson

EXTRA TONNAGE at NO EXTRA COST

FASTER OPERATION

Large diameter sheaves, with fully sealed needle bearings, reduce friction power loss, deliver full power to cutting lips to provide faster, smoother operation.

BIGGER LOADS

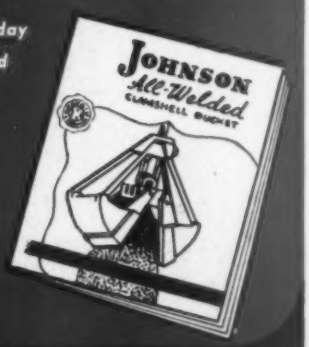
Because all-welded construction improves bucket balance and lowers center of gravity, Johnson bucket teeth dig in straight and deep. Deep, big bites get capacity load every time, in any material.

LONGER LIFE

Stronger and longer-lived because all-welded construction, by saving weight on other parts, permits use of heavier lips, heavier sides, heavier bottoms. Protector plate below lower sheaves keeps sheaves clean, prolongs sheave life. Hard manganese cutting edge, welded to heavy lips, actually gets tougher with use.

⅜ to 2½ yard sizes. General Purpose, Wide Rehandling and Heavy-duty Digging Type.

Write today illustrated catalog.



THE C. S. JOHNSON COMPANY

KOEHRING SUBSIDIARY CHAMPAIGN, ILLINOIS

PIT AND QUARRY

JANUARY 1948

Vol. 40 No. 7

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PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX

To subscribers: Data on lower right-hand corner of envelope indicates issue with which your subscription expires. In writing to have address changed, give old as well as new address.

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What B & W knows about Nose Ring Castings . . . CAN SAVE YOU MONEY

Outlasted Others 4 to 1

Unretouched photo (above) of B&W Nose Ring Castings on rotary kiln, after three and one-half years of severe use. Previous castings on same kiln failed after approximately nine months' service. Other installations of B&W Castings have served even longer and are still going strong.

(C-75)

FOR five years, cement plants having serious difficulty with the discharge ends of kilns were the subject of an intensive study by B&W engineers. Many of the problems revealed by these field studies were solved by the development of B&W High-Alloy Nose Ring Castings, which are now performing satisfactorily in a number of prominent cement plants. B&W Nose Ring Castings can help you reduce kiln maintenance and avoid costly shutdowns for several reasons:

❶ Reinforcing ribs, in compression against kiln shell, keep castings straight and true, and prolong brick life. Belling out and warping of kiln mouth, due to expansion of castings, overcome by improved design and method of mounting castings.

❷ Special alloy of 25% Chromium—20% Nickel, developed by B&W for nose ring service, has superior oxidation-resistance and low rate of permanent growth, giving castings longer service life.

❸ Initial installation costs are lower than for conventional designs because B&W Castings are much smaller and lighter in weight. B&W has pattern equipment for most standard sizes—which usually means quicker delivery and elimination of pattern charges.

Let us tell you more about the advantages of B&W Nose Ring Castings.

FOR CEMENT PLANTS — Pulverized-Coal Direct-Firing System . . . Pulverizers for Grinding Rock Products and Ores . . . Heat and Abrasion Resistant Alloy Castings . . . Stationary Boilers and Component Equipment . . . Waste-Heat Boilers . . . Fuel Burning Equipment . . . Refractories . . . Seamless & Welded Tubes.

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EDITORIAL

What's Ahead?

IN this, the 32nd annual Review and Preview Number of PIT AND QUARRY, we have attempted to gather for our readers all available information on the conditions existing within the nonmetallic minerals industries during the past year. Complete authentic reports on these various industries will, of course, not be available for from two to eight months in the ordinary course of events. In order to give our readers the most complete information possible at this date we sent out a questionnaire to hundreds of producers in several major industries, and in all parts of the country. In this questionnaire pertinent questions were asked about conditions within the industry in 1947, and the prospects for 1948 in the producer's own locality. A high percentage of replies was received, which gave us a fair cross-section of the country. This information, plus the limited government or industry released production statistics for a part of the year, and other sources, has enabled us to arrive at conclusions on conditions in 1947 and prospects for 1948 to which we do not hesitate to attach our signatures.

Review The reviews presented in these pages show that both the production and shipments of portland cement in 1947 reached new high records, even exceeding the previous record year of 1942 which, at that time, was regarded as unlikely ever to be exceeded. Less accurate information is available on aggregates production but it seems certain that sand and gravel output reached a level exceeded only in the 1942 war-boom year. Crushed stone output in the aggregate category probably duplicated this performance but the total for all types of uses probably exceeded the 1946 figures only slightly because of a sharp drop in the demand for agricultural limestone due to the partial withdrawal of government support. Lime shipments fell slightly under 1947 due to a mid-year drop probably caused at least partly by the temporary withdrawal of government agricultural support. The production of gypsum and gypsum products undoubtedly reached a new all-time high, as did also sulphur, rock wool, pumice, perlite, roofing granules and others. Potash, talc, phosphate, sulphur, barites, bentonite and ground mica are also believed to have been in record demand.

The nonmetallic-minerals-producing industries as a whole apparently reached a new peak of production and sales in 1947. Because of moderate and general price increases during the year the value of production was undoubtedly far ahead of any previous year.

Preview The prospects for 1948 are, of course, impossible to predict with any degree of accuracy but here again the sources of information on which we have based our estimates have been fairly accurate and dependable over a period of years.

The construction forecast, another annual feature of this issue, predicts a considerable increase in construction volume for 1948. The record high prices and demand for agricultural products are almost sure to be exceeded in 1948. Business and manufacture generally is expected at least to hold its own. On the basis of such prospects it can only be predicted that the total demand for nonmetallic minerals will again set a new record for both volume and value. Those individual products which set records or near records will duplicate their performance. The cement, sand and gravel, phosphate, potash, gypsum, roofing granules, pumice and perlite industries, among others, are expected to set new records.

Your Convention Programs

WHEN this issue of PIT AND QUARRY is received there will still be time for you to get your hotel reservation for one or more of the four big industry conventions to be held at the Netherland Plaza Hotel in Cincinnati the last two weeks of January. We mean, of course, the annual conventions of the National Sand and Gravel Assn., January 20-22; the National Ready Mixed Concrete Assn., January 21-23; the National Crushed Stone Assn., January 26-28; and the Agricultural Limestone Division of the N. C. S. A., January 29-30.

We could point out at great length the many reasons why you should attend and how you would benefit by doing so, but space does not permit. First, you would attend open meetings of the most progressive producers in your industry, producers operating large, small and medium-sized plants. You would hear them, and also top association executives, government research and business experts, and others, discuss all types of problems which affect your business directly or indirectly and locally or nationally. Open forums, for years an increasingly popular feature, will give you the opportunity to ask questions on operating or other problems with the assembled experts and producers there to answer them.

These open forums are friendly, informal affairs at which everyone is given an opportunity to speak. However, if you have problems or ideas you would prefer to discuss less publicly, the association staffs, the speakers and other experts, and the top producers and representatives of the leading machinery manufacturers selling to this field are available. Many find these contacts to be the most important ones at a convention.

This year, as you probably already know, these conventions will include machinery exhibits for the first time since 1942. These exhibits are always an important feature and many producers attend primarily to see them and to discuss their operating problems or needs with the top sales-engineers who are in constant attendance at their companies' booths. The exhibits this year are more numerous, bigger and better than ever before.

For more complete advance information on these conventions and the exhibits please turn to pages 84 to 87. There, as has been our custom for many years, we present advance programs of the meetings which will give you an idea of the wide range of subjects to be covered.

For the first time this year we also present layouts of the exhibits with a list of the companies exhibiting and the numbers of their booths. These are copied from the official programs and lists of exhibitors which will be obtainable at the registration desks at the conventions. Please note the location of PIT AND QUARRY's booth at the entrance to the exhibit hall. There will be someone in constant attendance during official exhibit hours.

Make your railroad reservation at once and reserve a room at one of the many good hotels in or near Cincinnati. If you prefer to spend only one day, select the one you want and arrange to be there. You will find it to be a profitable investment.

Walter E. Trautfer

PIT AND QUARRY

CHICAGO JANUARY, 1948

A.E.D. 29th Annual Meeting Scheduled for Feb. 15-19 To Draw Large Attendance

The 29th annual meeting of the Associated Equipment Distributors, an association of construction equipment distributors and manufacturers, will be held in Chicago on February 15-19, according to announcement of Harry J. Hush, New York, Chairman, A.E.D. convention committee. Reservation requests indicate that the number of member companies to be represented at this meeting may exceed all previous records.

Mayor Martin J. Kennelly, a leading Chicago businessman, will deliver a message of welcome at the opening session. The A.E.D. convention committee is arranging a comprehensive program, which will be confined largely to topics of common interest to manufacturers and distributors.

Two and a half of the four meeting days will be devoted to discussion and talks on business problems. The remaining time will be open for sales meetings and discussion groups arranged by the various manufacturers with their distributors.

Members of the committee are: President W. A. Danner; G. F. Lowe, Chicago; Jack How, San Francisco; F. J. Fitzpatrick, Hyde Park, Mass.; and E. H. Kliebenstein, Ridgefield, N. J. Frank G. Knight, A.E.D. executive secretary, and Paul F. Cassady, assistant secretary, of Chicago, will also attend the convention committee meeting.

Dept. of Labor Bulletin Sheds Light on Complex Problems

How the Fair Labor Standards Act is affected by the Portal-to-Portal Act of 1947 is explained in a bulletin issued by William R. McComb, administrator of the Wage and Hour and Public Contracts Divisions, U. S. Department of Labor.

Copies of the bulletin are available at the division offices. Apply to Don Long, Room 5408, Department of Labor Building, Washington, D. C.

The American Road Builders' Association has announced that a road builders' conference will be held in Washington, D. C., from January 26 to 28. Sessions will be held at the Mayflower, Statler and Willard hotels.

Coming Events

January 12-16, 1948—Cleveland. Second National Materials Handling conference and exposition, Public Auditorium.

January 14-15 1948 — Washington. Annual meeting, National Agricultural Limestone Association, Inc., Hotel Statler.

January, 20-22, 1948—Cincinnati. 32nd annual convention and exhibit, National Sand and Gravel Association, Netherland Plaza Hotel.

January 21-23, 1948—Cincinnati. 18th annual convention and exhibit, National Ready Mixed Concrete Association, Netherland Plaza Hotel.

January 21-24, 1948—New York. Annual meeting, American Society of Civil Engineers, Hotel Commodore.

January 26-28, 1948—Cincinnati. 31st annual convention and exhibit, National Crushed Stone Association, Netherland Plaza.

January 29-30, 1948—Cincinnati. 3rd annual convention and exhibit, Agricultural Limestone Division, National Crushed Stone Association, Netherland Plaza Hotel.

February 15-19, 1948—New York. Annual meeting, American Institute of Mining and Metallurgical Engineers, Pennsylvania Hotel.

February 15-19, 1948—Chicago. 29th annual meeting, Associated Equipment Distributors, Edgewater Beach Hotel.

February 23-26, 1948 — Denver. 44th annual convention and exhibits, American Concrete Institute, Shirley-Savoy Hotel.

February 26-28, 1948 — Roanoke, Va. Annual convention, Sand-Lime Brick Association, Roanoke Hotel.

March 1-3, 1948—New York. Annual convention, National Concrete Masonry Association, Hotel New Yorker.

March 11-13, 1948—New Orleans. 40th annual convention, American Concrete Pipe Association.

Famed Permanente Quarry Takes Time Out After Breaking 20-Year Record

After shattering all production records for a 20-year period, the Dall Island, Alaska, quarry of Permanente Cement Company has discontinued operations for the winter. This quarry produces high-grade limerock for the Diamond Division cement plant of Permanente Cement Company, located in the heart of industrial Seattle. Nearly 220,000 tons of rock were crushed and handled to the stockpile, and thence transported to Seattle by the SS *Diamond Cement*.

Quarry operations will resume in early spring. The *Diamond Cement* has been tied up at the Permanente Cement Company wharf in Seattle and is undergoing her annual repairs.

Climaxing the season's operations, a massive coyote and well drill shot brought down over 200,000 tons of rock, ready for use in 1948. This shot was planned by the Pacific Powder Company.

Dave Gray is quarry superintendent, and Captain Harold Larson is in charge of the vessel. The Diamond Division of Permanente Cement Company, including the Alaska quarry and the Seattle plant, is under the direction of Gordon Tongue, division manager.

Natl. Minerals Advisory Council Formed by Interior Department

Representative leaders of the mineral industries of the nation met with Secretary of the Interior J. A. Krug on December 12 to establish a National Minerals Advisory Council, with a view to advising the secretary on the policy and program relating to the mineral supply position of the United States.

Men in all the major branches of the mineral industries who have a broad knowledge of the problems involved were present. The council will be representative of all sections of the country and of both large and small companies in the extractive and processing phases in the fields of ferrous metals, nonferrous metals, and nonmetallics.

The council is being held to a limited number of individuals, but it is anticipated that the group will subdivide itself into commodity committees to work out specific problems in those fields and to coordinate their efforts with the various related industry committees advising the Munitions Board.

Cement-Quarry Section of Natl. Safety Council Names Executive Committee

At the Cement and Quarry Section meeting of the National Safety Congress held last October the following were elected officers and members-at-large, to form the new executive committee:

General chairman, F. J. Buffington, New York Trap Rock Corp., Cold Spring, N. Y.; vice-chairman, J. R. Boyd, National Crushed Stone Assn., Inc., 1415 Elliot Place, N.W., Washington 7, D. C.; secretary, Roma M. Turpen, National Lime Assn., 927 Fifteenth St., N.W., Washington 5, D. C.; news letter editor, Dan J. Morse, Ideal Cement Co., Denver 2, Colo.; engineering committee chairman, L. D. Cowling, Louisville Cement Corp., Speed, Ind.; membership committee chairman, Henry Turner, A. P. Green Fire Brick Co., Mexico, Mo.; program committee chairman, Lea P. Warner Jr., Warner Co., Philadelphia, Pa.; statistics committee chairman, Forrest T. Moyer, Accident Analysis Division, U. S. Bureau of Mines, Washington 25, D. C.; visual aid committee chairman, F. L. Maus, Alpha Portland Cement Co., Easton, Pa.

Members-at-large are V. P. Ahearn, National Sand & Gravel Assn., 955 Munsey Bldg., Washington 4, D. C.; F. R. Dittoe, The Kelley Island Lime & Transport Co., Cleveland, O.; A. J. R. Curtis, the Portland Cement Assn., 33 W. Grand Ave., Chicago, Ill.; O. M. Graves, General Crushed Stone Co., Easton, Pa.; T. W. Jones, The New Haven Trap Rock Co., New Haven, Conn.; Johan Norvig, Pennsylvania-Dixie Cement Corp., Nazareth, Pa.; M. C. M. Pollard, National Gypsum Co., Buffalo, N. Y.; W. M. Powell, Medusa Portland Cement Co., Cleveland, O.; General H. A. Reninger, Lehigh Portland Cement Co., Allentown, Pa.; Walter J. Scahill, Missouri Portland Cement Co., St. Louis, Mo.; Wallace E. Wing, Marblehead Lime Co., Chicago, Ill.

G. G. Grieve was named staff representative for the National Safety Council.

$9,301,000 Contract Awarded To Flippin Material Company

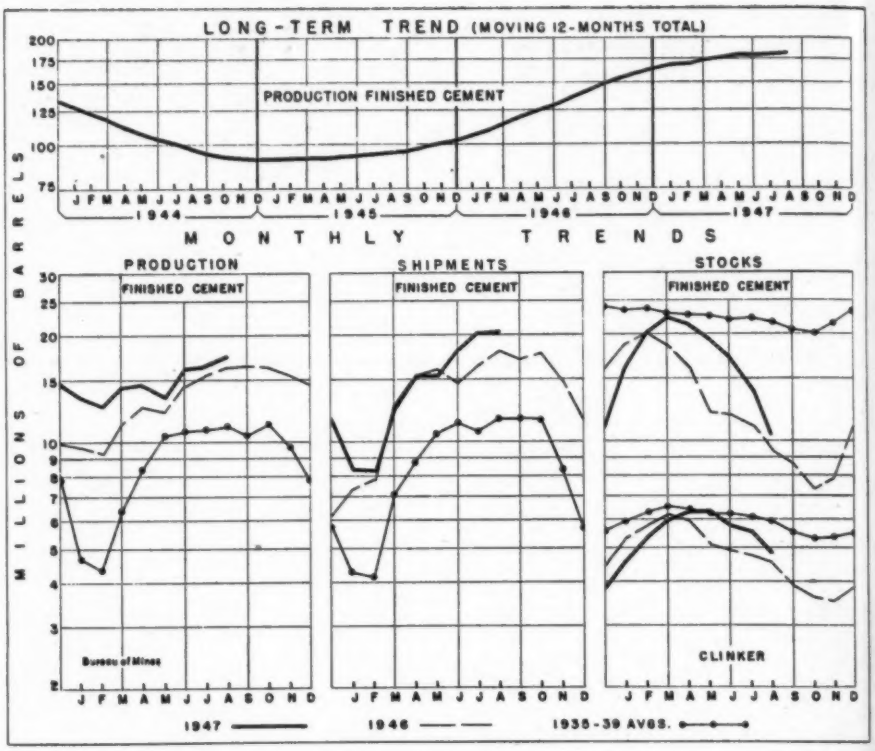
Flippin Material Company of Houston, Texas, has been awarded a contract by the United States Engineers, for 1,100,000 tons of fine aggregate and 2,700,000 tons of coarse aggregate, on a bid of $9,301,000.

The aggregate will be used in the construction of the Bull Shoals Dam near Mountain Home, Arkansas. It is understood that delivery will be started in the late spring or early summer of 1948, and will run for two and a half years.

General Contractors to Hold 29th Convention at Dallas

During the week of February 9 to 12 the Associated General Contractors of America will hold their 29th annual convention at Dallas, Texas.

The general session on Monday afternoon, February 9, will set activities in motion. Separate meetings of building contractors, highway contractors, and heavy construction contractors will be held on Tuesday, and the general sessions will follow, ending on Thursday, February 12. Convention headquarters will be the Adolphus and Baker hotels.



Production of 17,480,000 barrels of portland cement in August, 1947, reported to the U. S. Bureau of Mines was 8 percent greater than that reported for August, 1946. Mill shipments reached 20,362,000 barrels in August, 1947, a figure 13 percent greater than that reported for August, 1946, the peak month of that year. Stocks of finished portland cement on August 31 were 10,455,000 barrels, an increase of 12 percent over that reported for August, 1946. Clinker production of 16,881,000 barrels was 5 percent greater than that reported for August, 1946.

Demand for cement, as indicated by mill shipments, was higher than in August, 1946, in all but one district.

The long-term trend in production of finished portland cement is indicated in the accompanying chart. Monthly production, shipments, and stock trends, compared with the 1935-39 average, are also indicated graphically.

$150,000 California Plant In Production at Hell's Hinges

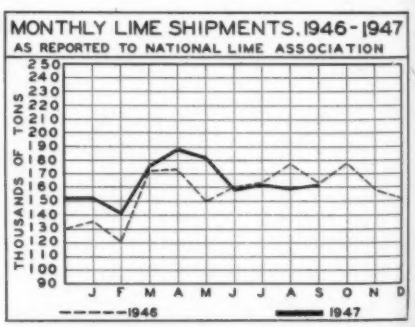
From a rock deposit noted on maps as "Hell's Hinges," near Corona del Mar, California, the Newport Rock and Gravel Company is producing material for local dealers at its new $150,000 plant.

The big plant is processing gravel from surrounding basaltic rock and is also producing an asphaltic mix weighing 10 percent less per cubic yard than those made from other materials. The lightness of the aggregate, say officials, is due to the extreme angularity of the rock particles.

Solvay Buys Limestone Beds For Production of Alkalis

After conducting a survey in 15 states, the Solvay Process Company has purchased several hundred acres of land near Illmo, Missouri, as a limestone reserve. The tract is said to contain high-grade limestone sufficient for a 50-year supply for the processing of soda ash and other alkalis.

Solvay operates plants in Baton Rouge, Louisiana, Syracuse, New York, and Detroit, Michigan.



According to data collected by the National Lime Association, 44 companies in September, 1947, shipped 160,369 tons of lime (92,808 quicklime; 67,561 hydrate). Reporting companies represent 47.5 percent of the association members' total capacity of record. Based on Pit and Quarry's estimates for the remainder of the industry, the total shipments for the month by all plants were approximately 471,400 tons. Shipments of lime by uses and grades for September, 1947, were:

	Quicklime (tons)	Hydrate (tons)
Agricultural	2,303	10,481
Building	12,381	31,130
Chemical	78,124	25,950
Total	92,808	67,561

Goodyear's R. S. Wilson To Address Associations At Cincinnati Conventions

Robert S. Wilson, vice-president and sales manager of The Goodyear Tire & Rubber Company, will address delegates of the National Sand and Gravel Association and the National Ready Mixed

Robert S. Wilson

Concrete Association at a joint luncheon to be held at the Netherland Plaza on January 21.

Mr. Wilson has a sales service record covering 35 years with Goodyear, having joined the company in 1912 as manager of the tire service department. Throughout the years since that time he was assigned various posts of responsibility until in 1928 he was made vice-president and sales manager. During the final months of World War II he served as director of special rubber programs for the War Production Board. He is one of three representatives of the National Association of Manufacturers on the Citizens Federal Committee on Education, appointed to advise the U. S. Commissioner of Education on policies and programs.

FHA Reports 30,251 Homes Started During October, 1947

More dwelling units financed and built under the program of the Federal Housing Administration were placed under construction during October, 1947, than in any other month since its establishment in 1934, it was announced by Commissioner Franklin D. Richards.

Start of construction was reported by FHA insuring offices in October for 30,251 new dwelling units. This is an all-time record which exceeds by more than 4,000 the previous record of 26,100 units started during July, 1941.

Practically all of these new homes and housing projects are being built and financed under the veterans' emergency provisions of the National Housing Act (Sections 603 and 608, Title VI) enacted by Congress in May, 1946, Mr. Richards said. The total authorization of $4,200,000,000 for Title VI mortgage insurance has been exhausted, he said, and no further applications for Title VI insurance are being received by FHA insuring offices.

Drummond Dolomite Aims at 1,500,000-Ton Output in 1948

Drummond Dolomite Incorporated, with plants near Detour, Michigan, in the Sault Ste. Marie country, was rapidly nearing the production goal—750,000 tons—set for 1947 as last reports reached us. The fiftieth freighter-load of crushed dolomite had left the dock. Next year, says C. G. Knoblock, vice-president and general manager, he and his crew of 117 men will aim at 1,500,000 tons. (See PIT AND QUARRY, November, 1946, page 74 for a complete story of the company's facilities.)

Nine different sizes of stone are produced at the two plants, which are operated during the shipping season only. During 1947 the crew worked on a round-the-clock basis from May until ice in the lake channels ended the trips.

During the last year Mr. Knoblock has been stressing safety measures, and the plant has enjoyed a season free of serious accidents. Bill Carper is plant foreman.

YOU CAN HELP

We have had a number of appeals in recent years from countries occupied or at war during World War II asking for complete files of wartime issues of PIT AND QUARRY. It was, of course, impossible to send the magazine to subscribers in these countries during the war and for some time afterward, and they are now anxious to complete their files. In most of these countries the nonmetallic minerals industries were kept in production, but few advances in technology were made. They now want to know what was done during this period in this country, which is now the acknowledged leader in the technology of these industries, particularly cement.

We are filling all these requests we can from our own files as a service to our readers, sending copies first to associations, technical libraries, etc., where they will serve the most readers, but have now run out of certain issues. We would appreciate it very much if any of our subscribers who have no further use for any of the issues listed below would send them in as a good-will gesture to these countries. We, in turn, will send them on free of charge and postpaid to their destination. Your cooperation will be very much appreciated.

Issues Desired

All of 1941 and 1942.

May, August, October, November, 1943.

January, 1944.

January, March, July, November, 1945.

January, April, May, July, 1946.

Carl R. Olson Appointed Vice-President of Four Kaiser-Owned Companies

Carl R. Olson, a Kaiser veteran of nearly 15 years' experience, has been named vice-president of four companies within the Kaiser family: Permanente Cement Company, Standard Gypsum Company of California, Permanente Steamship Corporation, and Glacier Sand and Gravel Company.

Prior to this advancement, Mr. Olson was progressively salesman, sales manager, and general manager of the four companies, in addition to serving as general manager of the Sand and Gravel Division of the Henry J. Kaiser Company. In addition, he assisted in the initial development of various other Kaiser

Carl R. Olson

activities including appliances, iron and steel sales, export sales and traffic.

Before joining Kaiser as office manager during concrete-pouring operations on the San Francisco Bay Bridge project in 1933, Mr. Olson was employed by a general contractor for four years and had a part in the building of the Moffett Field, California, air base in 1932.

New Crushing Plants Opened In Decatur County, Indiana

Several new crushing operations have been launched recently in Decatur County, Ind. Crushing operations were begun on September 1 at Harris City, Ind., by the Harris City Stone Company, which is currently producing approximately 600 tons of agricultural limestone per day at its plant 6 miles southwest of Greensburg. The company is headed by S. A. Hodson, president; O. P. Stark, vice-president; Mrs. Mary Roper, secretary-treasurer; Robert Roper, general manager; and Roland Parmer, superintendent.

A number of quarries have been placed in operation by the New Point Stone Company near Greensburg. These are producing highway stone.

M. A. Berns, Publicity Chief Of Universal Atlas Cement, Victim of Heart Attack

Max A. Berns, publicity manager for the Universal Atlas Cement Company, United States Steel Corporation subsidiary, died suddenly of a heart attack on November 19 at his home in New Rochelle, New York.

Mr. Berns was born in Milwaukee and attended the public schools of Chicago. He was graduated from the University of Illinois in 1910 with a B.S. degree in Civil Engineering. He became instructor of mathematics and mechanical drawing at East Technical High School in Cleveland, Ohio, where he served in this capacity until 1913. In that year he joined the Universal Atlas Cement Company at Chicago as publicity representative. In 1917 he served in France as a captain of the U. S. Engineers. He returned to the company's Chicago office in 1919 and was made publicity manager in 1920.

Before coming to New York in 1938 Mr. Berns lived in River Forest, Illinois, where he was prominent in civic affairs. He was trustee of the village of River Forest; president of the Playground and Recreation Board; trustee of the River Forest Presbyterian Church; chairman of the Publicity Committee and member of the River Forest Tennis Club; president of the Parent Teachers' Association of Oak Park and River Forest High School; chairman of the Shakespearean Foundation of Oak Park and River Forest High School; manager of the Globe Theatre Shakespearean Players, which enjoyed bookings all over the United States; and founder and president of the River Forest Sunday Evening Club, as well as editor of its organ, *The News*.

In 1930, Mr. Berns was president of the Advertising Council of the Chicago Association of Commerce and subsequent to that time was a member of that chamber's publicity committee for many years. In 1935 and 1936, he wrote a newspaper feature for the King Features Syndicate with a circulation of over 3,000,000. The title of his daily column was "Daily Constitutionals," on topics pertaining to the Constitution of the United States. He also wrote a similar column "Weekly Constitutionals," for 1,000 weekly newspapers.

At New Rochelle, Mr. Berns was an active member of the Men's Club of the First Presbyterian Church and of the New Rochelle History Club. In New York City he was a member of the Public Relations Advisory Committee of the National Association of Manufacturers and a member of the Illuminating Engineering Society.

In his 27 years as publicity manager of Universal Atlas, Mr. Berns ably directed advertising and public relations activities. From the early days, when the use of concrete on farms was being publicized and on through the years with the introduction of new cements and the promotion of their uses to new markets, Mr. Berns was in the forefront with keenly conceived and skillfully executed publicity campaigns in furtherance of his company's position.

Typical of his successes in the promotional field were his editorships of the consumer-angle magazine, *The Universal Farmer,* which attained a circulation of

Max A. Berns

570,000, and the house organ, *The Universal Atlas Dealer,* devoted to the sales activities of building-supply dealers. He was the author of many product promotional pieces, such as "Light Reflecting Concrete for Factory Floors," "White Guide to Safety" (white concrete reflecting curb), and "Case Histories of Oil-Well Cementing." He collaborated in the preparation of many articles on air-entraining cement which appeared in the trade press.

Pst! Have You Heard?

In a recent issue of the Gouverneur (New York) *Tribune Press* appeared an article which featured the W. H. Loomis Talc Corporation's facilities in that city and also brought a feeling of considerable gratification to the staff of PIT AND QUARRY.

The *Tribune Press* reprinted in full a detailed account of the Loomis operation which had been written for PIT AND QUARRY by William M. Avery, senior field editor. Mr. Avery had visited the plant for an on-the-spot report. The story was published in our October, 1947, number.

Agricultural Limestone Group To Hear Senator G. A. Aiken

Plans for the third annual meeting and convention of the National Agricultural Limestone Association, Inc., to be held in Washington, D. C., on January 14 and 15, have been virtually completed, according to a bulletin issued by Robert M. Koch, secretary of the association.

Senator George A. Aiken, chairman of the Senate Committee on Long-Range Agricultural Programs, will address the members at a banquet on January 14.

Reeve Hoover Heads Board Of Commercialores, Inc.— New S. Carolina Concern

Commercialores, Inc., a concern organized in March, 1947, for the purpose of developing a large kyanite deposit in South Carolina, has elected Reeve Hoover of Washington, D. C., as the chairman of its board of directors. Mr. Hoover is vice-president of the Dominion Minerals, Inc., Piney River, Virginia.

At a recent meeting of the officials it was reported that satisfactory progress has been made on the construction of a large plant near Clover, South Carolina. Kyanite is a silicate of alumina widely used in super-duty refractories and in other branches of the ceramic industry.

Henry S. Doty, formerly manager of the Kyanite Products Corporation, is president of Commercialores. L. G. Wilson is vice-president and treasurer, and N. K. Karchner is vice-president in charge of production. Members of the board of directors, in addition to Mr. Hoover, include the following: Clyde Williams, H. S. Doty, Albert R. Eckel, Godfrey S. Rockefeller, George Percy and Richard E. Metz. Offices will be maintained at 39 Cortlandt Street, New York City, and at Clover.

Lyman-Richey Safety Record Attributed to Blow-Proof Tires

The Lyman-Richey Sand & Gravel Corporation of Omaha, Neb., has been awarded another safe-driving award to add to the large number of such certificates the firm has received during the last decade. Award was made by the Omaha Safety council, with Paul R. Stevens, council manager, making the presentation, and L. C. Curtis, Jr. purchasing manager for Lyman-Richey, accepting on behalf of the company's truck drivers.

Mr. Curtis said his company's trucks are the first in Nebraska to be equipped with wire cord tires, which were developed during World War II for desert driving and are blowoutproof. He declared that these tires have been instrumental in helping his truck drivers go more than 8,000,000 miles with only eight minor accidents.

American Potash & Chemical Production to Be Expanded

American Potash & Chemical Corporation's officials recently announced the completion of the first phase of the firm's post-war program of stepped-up output.

Plans for increased production, adopted in 1947, called for an initial expenditure of $7,000,000 by the end of 1948. In addition to enlarging its output, the concern will also develop new products.

On the morning of November 22 a fire destroyed the hoist house and its contents at the Monninger Sand, Gravel and Concrete Products Company's facilities near Terre Haute, Indiana. Damage was estimated at $10,000.

Natl. Gypsum Promotions Mark Phenomenal Increase In Sales Volume and Value

Several executive promotions were recently announced by Melvin H. Baker, president of the National Gypsum Company. Mr. Baker indicated that these appointments had been made to strengthen the administrative setup of the concern, which had a year of unprecedented growth in 1947. (Sales jumped from $21,000,000 in 1946 to $60,000,000 in 1947).

Lewis E. Sanderson, superintendent of construction, has been made vice-president in charge of operations, succeeding Gordon H. Tarbell, who has reached the retirement age. Dean D. Crandell has been named vice-president in charge of sales and advertising.

Appointed to Mr. Crandell's former post of vice-president in charge of research was Frank L. Marsh. Charles E. Masters, controller, has become vice-president in charge of accounts.

A newly-created post, that of director of the administrative planning department, has been filled by William T. Davidson, who has been with National Gypsum since 1935.

Three other appointments announced at the same time were as follows: Fred A. Manske, general production manager in charge of all manufacturing; E. B. Hollingsworth, assistant production manager; and S. David Skinner, chief engineer.

Expansion Program Launched At Dolite Company's Plant

J. J. Schedel, president and general manager of the Dolite Company, Toledo, Ohio, has announced a program of expansion and improvement at the firm's raw and roasted dolomite plant at Gibsonburg. The new equipment on order includes an 11- by 10- by 173-ft. Nordberg kiln and a 615-hp., 12- by 15-in. National Supply Co., Model 60 G8 diesel engine. The first will supplement the present two kilns and the latter the present diesel engine, space having been left for this new equipment in the original plant design. A No. 35E Babcock & Wilcox direct-firing coal pulverizer for the new kiln is already on hand.

These improvements are the first steps in a program which will cost over $400,000. Later additional storage silos will be built, the crushing department will be remodeled and other improvements will be made.

1948 Red Cross Drive Stresses Need for More Liberal Giving

The 1948 fund campaign of the American Red Cross reminds the public that "this year greater sums are needed for an equal job." To estimate a campaign goal takes a lot of figuring, based in part on statistics of the past, in part on unpredictable needs of the coming year, and, most important, on definite plans for community well-being.

In its steadily increasing emphasis on a peacetime program, the Red Cross is expanding its work for veterans and their

dependents, while at the same time maintaining its traditional services to the armed forces and to civilians.

Salt Lake City Firm to Open $150,000 Crushing Plant

J. B. & R. E. Walker, Inc., operators of a crushed stone and ready-mix plant at Salt Lake City, Utah, have announced that they expect to open their new $150,000 crushing plant in the immediate future. The new facilities will supply the firm's needs for its ready-mixed concrete department and furnish enough for the commercial market.

Storage space will be provided for 100,000 tons of processed material. Six sizes of aggregate will be stored. The estimated output will be approximately 350 tons per hour.

New Gravel Plant Opened By Oregon Navigation Firm

Proprietors of the Umpqua River Navigation Company, Readsport, Ore., have built a new gravel plant with a capacity of 600 cubic yards per day. The new facilities went into operation last July.

Six gravel barges, one mounted with a derrick, are used on the river.

Industrial Products Corp. Installs Carney Equipment At Mt. Pleasant Plant

A new Carney Rock-wool batt machine recently purchased by Industrial Products Corp., of Nashville, Tennessee, for its 3-cupola mineral wool plant at Mt. Pleasant, 60 miles south of Nashville, is producing up to 110,000 sq. ft. of full thick resilient batts per day, according to Joe E. Johnson Jr., president.

Designed and installed for Industrial Products Corporation by engineers of The Carney Co., Inc., of Mankato, Minnesota, the machine turns out six standard-size batts simultaneously. A crosscut saw cuts 12 two-ft. or 6 four-ft. size batts, according to adjustment. Batts of various thicknesses up to 6 inches and in density up to 6 pounds are made.

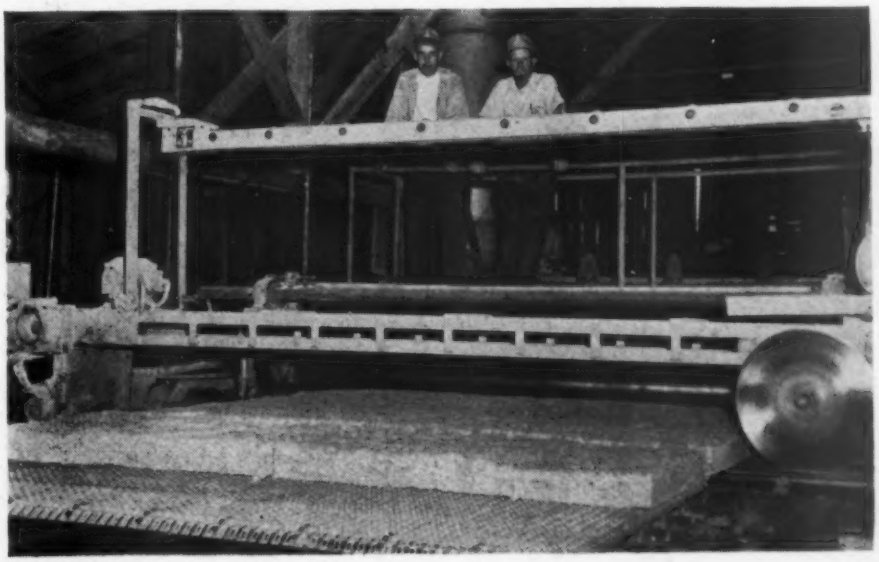
The blow chamber is 50 feet long, 9 feet, 6 inches wide and 25 feet high. A 48-in. cupola unit operates the machine.

Vapor barrier on the batts is applied over a double steam roll suspended in a pit, at temperatures in excess of 300 degrees. Industrial Products Corp., like the Carney Co. which originated the Golden Fleece Batts, uses a plastic binder. Batts are taken from the machine manually or by a specially-designed mechanical packer.

In addition to its batt production, Industrial Products is turning out about 60 tons of finished granulated, loose and industrial preparations daily.

The Industrial Products Corp. batt machine is identical to the equipment developed by the Carney Co. for installation in the new Carney-Pacific Rockwool Co. at Longview, Washington.

Present at the start of operations were officers of Industrial Products Corp., including Joe E. Johnson Jr., president; Hampton Lackey, vice-president and treasurer; Guy O. Travis, vice-president and secretary; and Raymond Skillern, general superintendent. Representing the Carney Co. were H. E. Carney Jr., president; William C. Duane, chief chemist; John Sexton, production engineer in charge of installation; and Anton Gabler, operating engineer.



• President J. E. Johnson Jr. and Raymond Skillern, general superintendent, watching the batt machine in operation.

A. J. R. Curtis Awarded Holmes Assn. Safety Medal At P.C.A. Annual Meeting

The Joseph A. Holmes medal of honor was awarded on November 12 to A. J. R. Curtis, safety director of the Portland Cement Association, for his contributions

• A. J. R. Curtis (right) receiving the Holmes medal from Dan Harrington.

to safety in the cement industry. The medal was presented by Dan Harrington, secretary of the Joseph A. Holmes Association and chief of the Health and Safety Branch of the U. S. Bureau of Mines. The occasion was the closing session of the 46th annual meeting of the Portland Cement Association at the Drake Hotel. Approximately 300 cement company executives from all parts of the United States and five Canadian provinces were in attendance.

Mr. Curtis is the second individual to receive this medal, which Mr. Harrington called "a sort of super-award."

Chief Harrington, in making the presentation, referred to 1926, when he was placed in charge of the safety work of the Bureau of Mines. "At that time," he said, "one of the most interesting phases of safety procedure that came to my attention was the remarkable progress then getting well under way in connection with the association's safety trophy awards.

"To me," Mr. Harrington continued, "it appeared as if your members were attempting the impossible in trying to operate cement plants, usually with quarries attached, for a calendar year without a lost-time accident. However, not only were you trying to do this, you were accomplishing what you were attempting. It seemed to me that you people were actually performing miracles in safety accomplishments, and I'm still inclined to be of that opinion."

The safety record of two plants, one of which operated more than 12 years and 9 months without a disabling injury and the other, whose record of more than four million accident-free man hours is unterminated, Chief Harrington called, "among the most marvelous safety achievements in the history of the mineral industries in the United States."

The formal citation accompanying the medal credited Mr. Curtis with "outstanding leadership in connection with the remarkable safety record maintained for more than 25 years by the member plants of the Portland Cement Association. Largely as a result of his continuous efforts," the citation said, "most of the pants have operated for a calendar year or more without a lost-time accident, and at least 21 have been accident-free for more than 2,000 days."

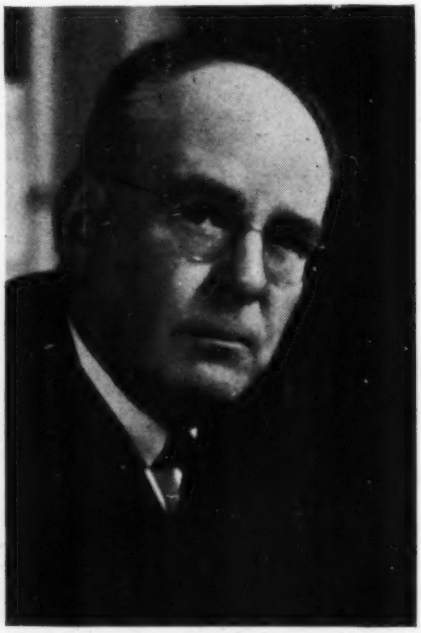
Mr. Curtis has been in charge of the Portland Cement Association's Accident Prevention Bureau since 1926. This bureau develops and administers the accident prevention and occupational health program of the member cement manufacturing companies. The industry comprises 160 cement plants, located in 36 states and five Canadian provinces. The plant personnel includes about 250 plant managers, more than 2,600 department heads and an estimated working force of more than 30,000 men.

According to the Bureau of Mines, Mr. Curtis has been responsible for numerous innovations promoting safety in cement mills and quarries. The special studies on safety introduced by Mr. Curtis have resulted in a 71 percent reduction in lost-time accidents in the industry in the past 25 years, the Bureau of Mines reports point out. The association's safety work includes the presentation of a safety trophy to the cement mill which operates a full calendar year without a lost-time accident. This trophy has been awarded or re-awarded to 139 mills which have operated a total of more than 700 calendar years without accidents.

Dividends Paid by Kelley Island And Lone Star Higher in 1947

Kelley Island Lime & Transport Company of Cleveland, Ohio, has declared a dividend of 35 cents per share, bringing the total disbursements last year to 80 cents per share. Last year's dividend per share was 60 cents.

Directors of the Lone Star Cement Corporation of New York City declared a year-end dividend of 75 cents and a quarterly dividend of 87½ cents per share on common stock, bringing the total 1947 payments to $4.25, as against $4 in 1946.



H. J. Love

O. G. Spickelmier Heads Rockhill Sand & Gravel Co. As Manager-President

O. G. Spickelmier, who has been associated with the Rockhill Stone and Gravel Company at Sterling, Kansas, for the last eight years, has been named manager and president of the firm, succeeding his father-in-law, H. E. Billman, who will now devote his time to his duties as president of the Sterling Drilling Company.

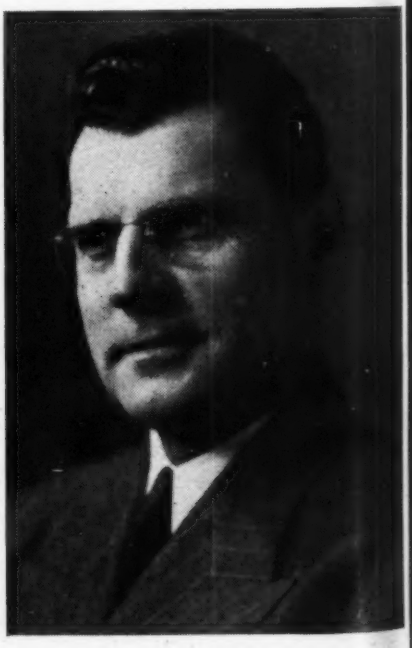
The firm operates two large dredging outfits and has a total capacity of 40 cars per day. New equipment has been recently installed and repairs were made at the plant. At present Rockhill is furnishing material for several big highway jobs.

Recently promoted to the position of plant superintendent was Sam Sall, who has been with the company for the last 20 years.

National Slag Association Names W. E. Bliss President

During the annual meeting of the National Slag Association, which was held in Washington, D. C., on November 19-20, the following officers were elected for the ensuing year: president, W. E. Bliss, vice-president, Standard Slag Company, Youngstown, Ohio; vice-president, E. L. Flad, manager, Slag Division, Carnegie-Illinois Steel Company, Pittsburgh, Pennsylvania; managing director-secretary, E. W. Bauman; and treasurer, W. S. Shaw.

H. J. Love had, after 30 years as the association manager, requested that he be relieved of the managerial responsibilities of the association. In acceding to Mr. Love's request, the directors, in recognition of his services rendered to the slag industry, arranged for Mr. Love to continue with the association as consultant.



E. W. Bauman

Corson Research Project Develops Fly-Ash-Slag Brick—Plant to Be Built

An enormous amount of research has recently paid off with the development of a new process for producing brick. The new process utilizes two heretofore worthless materials—fly ash and slag—both waste by-products formed in the combustion of powdered coal at high temperatures. In excess of 2,000,000 tons of fly ash and slag are produced every year by power-generating stations, placing the supply of raw materials in or near the large brick-buying population centers.

With the proper proportions of slag and fly ash, a new brick is formed which closely resembles a high-grade shale or clay product. The colors obtainable vary from a pinkish buff to a deep reddish purple, depending on the mix used, the source of the fly ash and slag and the methods employed in firing them. Recent test data indicate that the fly-ash-slag brick (fired to 1400 deg. F.) has a compressive strength of 6000-8000 p.s.i., absorption of 8 to 10 per cent, and a saturation coefficient of 0.78. The research work preceding this development was conducted by G. & W. H. Corson, Inc., well known lime manufacturers. The company also established a two-year graduate fellowship at Rutgers University for the furtherance of this work. G. & W. H. Corson is now in the process of designing a plant which will produce the new brick in large quantities.

These bricks do not have any appreciable shrinkage on firing, which means that the brick are uniform in size, color, and other characteristics. Because of this feature, the unburned body is said to have great possibilities in connection with large sizes of pipe or tile, where the shrinkage factor places limits on the size and shape of the ceramic bodies.

Jeffrey Research Center Opened at Columbus, Ohio

The Jeffrey Manufacturing Company, which makes mining and crushing machinery, has recently opened its new research center at Columbus, Ohio. The building is equipped for tests aimed at predetermination of field results.

Identified with the Jeffrey research and development program are the following: A. W. Lemmon, Chain and Materials Handling Division; J. A. Flint, Crusher and Traylor Division; Sterling C. Moon, Mining Division; L. E. Newell, superintendent of research manufacturing and testing.

R. J. Schumacher Organizes Basic Engineering Associates

Reuben J. Schumacher, who was for 25 years associated with The Kelley Island Lime & Transport Company as chief engineer and later with the Material Service Corporation and the Budd Company, has organized Basic Engineering Associates, a group of industrial engineers affiliated with Arnold & Weigel, lime plant engineers, Woodville, Ohio.

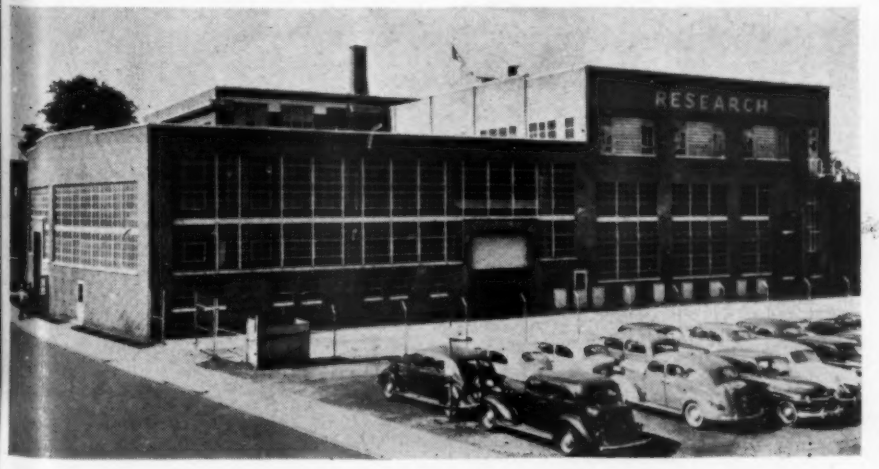
Basic Engineering Associates has its headquarters in Toledo, Ohio, at 240 Huron Street. On the staff are engineers competent to handle work of all kinds in the nonmetallic mineral field.

5-Year Liming Subsidy Rates For United Kingdom Published

A joint announcement of the agricultural department of the United Kingdom, published in the September issue of *Cement, Lime and Gravel*, indicated that a 50 percent subsidy for liming materials will continue for five years, beginning August, 1947, with a possible two-year extension after this period. Spreading cost is included, and the farmer may assign his subsidy to the supplier.

The rate of payment is as follows:

Kind of Liming Material	Contribution per Ton of Lime (Shillings and Pence)	Maximum Contribution per Acre (Shillings and Pence)
Class A—Burned lime, hydrated lime, mixed lime containing 60 percent calcium oxide or over.....	5/—	
Class B—Ground limestone and ground chalk, limestone dust, calcareous marl, by-product calcium carbonate from industry (dried or undried) containing 60 percent calcium carbonate or over, screened chalk all passing ¼-in. mesh.....	3/6	14/—
Class C—All other liming materials.....	2/—	



• New research center of Jeffrey Mfg. Co. at Columbus, Ohio.

John Curtin Jr. Becomes Warner Co. President—Succeeds Charles Warner

John Curtin Jr., formerly executive vice-president of the Warner Company, has been named president of the company, effective January 1, to succeed Charles Warner. Mr. Curtin has been associated with the Warner Company for more than 20 years. He became executive vice-president in January, 1947.

John Curtin Jr.

Mr. Warner will remain in the organization as chairman of the board of directors and chief executive officer of the company.

Charles Warner

He is the fifth descendant of the Warner family to head the company and has been its president for 32 years. As chief executive officer and chairman of the executive committee, he will act as advisor to Mr. Curtin.

Wallace Stone Company Completes Modernization —Converts to Diesel Power

More than 6 million tons of crushed stone and agricultural limestone have been produced since the Wallace Stone Company of Bay Port, Michigan, was first established. For three generations of Wallaces, this company has been producing concrete aggregates, railroad ballast, flux stone and agricultural limestone from the hard quarry stone which has a compressive strength of 26,000 p.s.i.

Recently the company modernized its plant, changing over from steam to diesel engines. The new power setup consists of three "Caterpillar" diesel D13000 engines in tandem—an innovation in the Bay Port area.

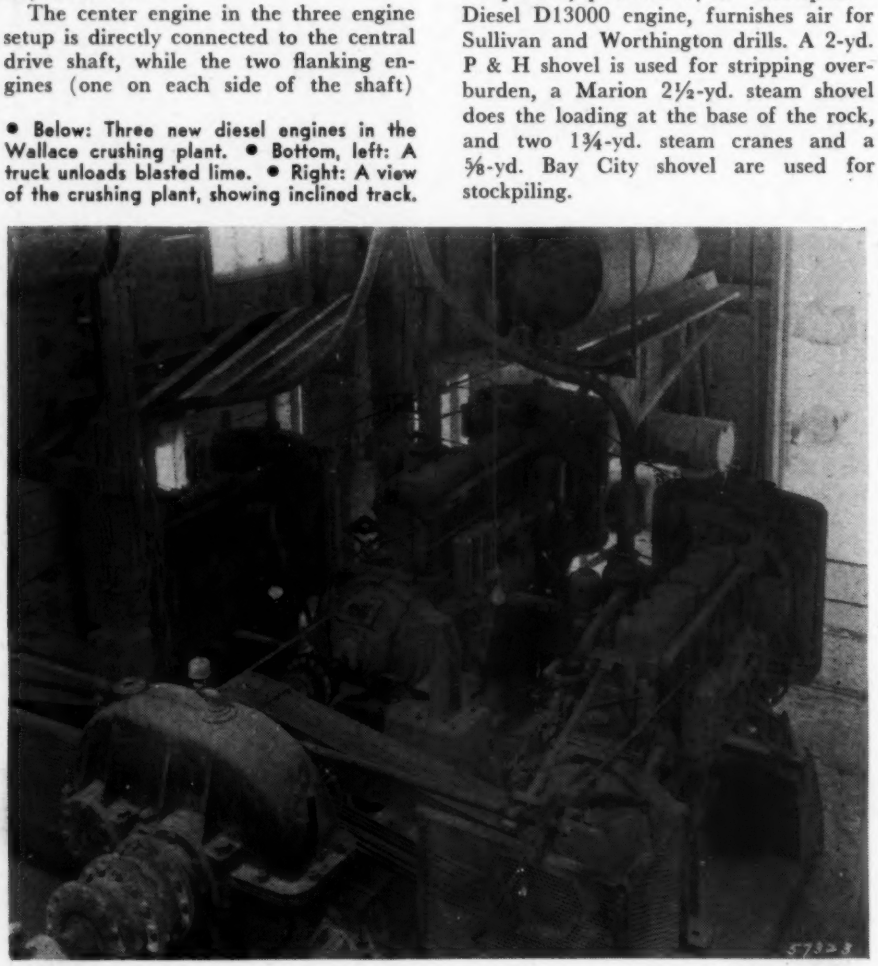
The center engine in the three engine setup is directly connected to the central drive shaft, while the two flanking engines (one on each side of the shaft) are V-belted to the same shaft. Two of the engines provide the 260 hp. needed to drive the crushing plant. The third engine is used only in the event of an emergency.

Side dump trucks carry the stone from the quarry to a feed hopper above an Allis Chalmers No. 12 K, 24-in. primary gyratory crusher. The trucks are dumped with an electrically-driven 20-hp. truck-box dump winch.

From the primary crushing operation, the stone is elevated on a belt elevator to a Gates revolving screen over a 4-ft. Symons cone crusher. From there it is belt carried onto two revolving screens which feed an Allis Chalmers No. 3 pulverator.

A Gardner-Denver 365 c.f.m. air compressor, powered by a "Caterpillar" Diesel D13000 engine, furnishes air for Sullivan and Worthington drills. A 2-yd. P & H shovel is used for stripping overburden, a Marion 2½-yd. steam shovel does the loading at the base of the rock, and two 1¾-yd. steam cranes and a ⅝-yd. Bay City shovel are used for stockpiling.

• Below: Three new diesel engines in the Wallace crushing plant. • Bottom, left: A truck unloads blasted lime. • Right: A view of the crushing plant, showing inclined track.



A. S. C. E. 1948 Schedule Of Quarterly Meetings Issued by W. N. Carey

Dates and places for the 1948 quarterly meetings of the American Society of Civil Engineers were announced by Colonel William N. Carey, executive secretary, at the society's national headquarters in New York.

Meetings for the 96th year of the society, oldest national engineering organization in the country, were announced as follows:

Annual meeting, Hotel Commodore, New York, January 21-24.

Spring meeting, William Penn Hotel, Pittsburgh, April 7-9.

Summer convention, Olympic Hotel, Seattle, July 21-23.

Fall meeting, Statler Hotel, Boston, October 13-15.

Civil engineering subjects of particular interest to the various regions in which the meetings are held are scheduled for discussion. All meetings will be preceded by two-day sessions of the board of direction.

South Carolina Advertises Its Nonmetallic Resources

Progressive spirits among the industrialists of South Carolina are using the medium of the press to publicize the nonmetallic mineral resources of the state.

An advertisement appearing in metropolitan dailies throughout the country announced that "There's White Gold in South Carolina's Hills." Attention was called to deposits of marl which offer material for cement, lime and sand brick production. Other natural conditions favorable to industry were also mentioned.

3 Tennessee Crushing Plants Acquired by Cale P. Haun

Controlling interest of the Franklin Limestone Company, Nashville, Tennessee, has been acquired by Cale P. Haun, vice-president of the Equitable Securities Corporation.

Also included in the purchase were the Middle Tennessee Stone Company and the West Tennessee Limestone Company, which together operate four rock crushing plants near Antioch, Franklin, Waverly and Martha, Tennessee.

Screenings

BY *William M. Avery*

ABOUT the time this issue reaches our readers, we'll be converging on Cincinnati for the annual conventions of the National Sand and Gravel Association and the National Crushed Stone Association. Taken in moderation, we think conventions are fine things, and we believe they attain their maximum stature in the annual gatherings of the sand and gravel and crushed stone groups.

We believe, in fact, that most national associations do a creditable job of staging their annual gatherings, but there are a few minor devices and ground rules that we'd like to see adopted at all conventions. Number 1, for which patents are pending, is called the Democratic Audience-Controlled System for Disposing of Dull Speakers. This ingenious device incorporates a trap door in

front of the public address microphone on the speaker's platform. Each chair in the meeting room is equipped with a simple push button which the occupant of the chair may press whenever he feels that a particular speaker has become unendurably tiresome. When a majority of the buttons have been pressed (that's the democratic feature), the trap door trips automatically and the speaker plunges into a vat of boiling oil located under the platform. A special tripping switch is provided on the dais so that unduly nervous or pessimistic speakers may eliminate themselves quickly without waiting for the democratic process to operate.

Another practice we want to see instituted at conventions has been used successfully for many years by the mining industry. We think caged canaries should be kept at various strategic points in meeting rooms as a check on the concentration of poisonous vapors. Ground rules would require instant adjournment of any meeting following the asphyxiation of two or more canaries. The adoption of this practice would undoubtedly limit all meetings to an hour's duration, with even greater economy assured for sessions in which pipe smokers predominate. The National Association of Canary Breeders is at present investigating to determine whether its industry could possibly supply enough canaries for this purpose. We have been advised by the association's executive secretary that the turnover (or, in this instance, the flopover) would never be less than 100 percent.

Our third reformation is concerned with what are laughingly called "identification" badges. These seem to have been designed originally on a number of wholly mistaken premises: to wit, that convention attenders *want* to be identified; that the average participant in a convention is gifted with the eyesight of a hawk; or that people at conventions amble about with high-powered field glasses for the purpose of reading small print at ten paces. We've noticed that inveterate conventiongoers invariably have much longer necks than the population at large, and we're reasonably sure that this is a consequence of repeated violent neck cranings in order to read X's name on a badge in time to greet him with false heartiness as "Good old Joe!" One of the worst features of this widely practised hypocrisy is that "Good old Joe" is usually caught off guard, and an awkward pause ensues while he tries desperately to get his bifocals trained on the greeter's badge.

Our solution for this problem is either to abandon the badge identification system altogether or to plaster the name of each registrant across both his front and rear in neon letters not less than six inches high. Guys with names like Stanislaus Yanowitzwiersbowski will probably have to have their monikers

mounted on small Goodyear blimps, a practice which should inject additional color and variety into the scene.

Now Junior!

IF the toy manufacturers have their way about it, the coming generation is bound to acquire a lot of know-how about modern materials-handling machinery. Our annual pre-Christmas scouting trip through Marshall Field's toy department left us bug-eyed on several counts, not the least of which was the price tags with which some of the exhibits were decorated. If the prices go any higher, we feel confident that C. I. T. Corp. will extend its financing activities into junior-sized construction equipment.

Among Santa's offerings for mechanically inclined moppets: dump trucks with real hydraulic lifts; power shovels in which young engineers can sit while they tear up the premises; scale model concrete mixers that use real cement. If the cement supply holds out, we suspect

that the last-named gadget will do more to make the American housewife aware of concrete than all the ads in P. C. A.'s excellent national advertising campaign. We just hope Junior won't try eating the stuff under the impression that its resemblance to breakfast cereal is more than superficial.

Preliminary Convention Programs

Netherland Plaza Hotel, Cincinnati, Ohio

National Sand and Gravel Assn., January 20-22
National Ready Mixed Concrete Assn., January 21-23

SUNDAY, JANUARY 18

National Sand and Gravel Association
Netherland Plaza Hotel

Meeting of the executive committee, 2:30 p. m.

MONDAY, JANUARY 19

Meeting of the board of directors, National Ready Mixed Concrete Association, 9:30 a. m., Parlor G.

Joint luncheon, boards of directors of the National Sand and Gravel Association and National Ready Mixed Concrete Association, 12:30 p. m., Parlors E & F.

Meeting of the board of directors, National Sand and Gravel Association, 2:30 p. m., Parlor H.

TUESDAY, JANUARY 20

Morning session, 9:30 a. m., Pavillion Caprice.

National Sand and Gravel Association
Presiding Officer: Richard N. Coolidge

Address of the president.

Report of the executive secretary.

Report of the director of engineering.

Report of the Committee on Cost Accounting System for the Sand and Gravel Industry, O'Neal M. Johnson, committee consultant.

Presentation of Sand and Gravel safety trophies—Winning companies: large plant class: McCrady-Rodgers Co., Captain plant, Ambridge, Pa. Small plant class: American Aggregates Corp., Raymond plant, Indianapolis, Ind.

Luncheon of members of Ohio Sand and Gravel Association, Parlor I.

Luncheon facilities will be provided for all delegates in the Hall of Mirrors, commencing at 12:15 p. m. Tickets must be purchased at the registration desk.

Afternoon session, 2:00 p. m., Pavillion Caprice.

National Sand and Gravel Association
Presiding Officer: J. R. Thoenen

Address, "Modern Railway Ballasts," H. W. Protzeller, consulting engineer, Railway Equipment Division, Nordberg Manufacturing Company.

Symposium on Purchaser and Producer Problems.

Address, "The Basis for Purchaser Requirements," R. R. Litehiser, chief engineer, Bureau of Tests, Ohio State Highway Department.

Address, "Specifying Aggregates on a Concrete Strength Basis," C. E. Proudley, chief materials and test engineer, North Carolina State Highway and Public Works Commission.

Address, "Special Characteristics for Concrete Aggregates," J. F. Barbee, assistant engineer of tests, Ohio State Highway Department.

Address, "Special Consideration for Bituminous Aggregates," John Goshorn, assistant engineer of tests, Ohio State Highway Department.

Address, "Problems of Producing Sand and Gravel," Stanton Walker.

"The Story of River Sand and Gravel," a motion picture furnished through the courtesy of the Keystone Sand Division of Dravo Corporation.

Manufacturers Division, National Sand and Gravel Association, 8:15 p. m., Parlors E. & F.

WEDNESDAY, JANUARY 21

Morning session, 9:30 a. m., Pavillion Caprice.

National Ready Mixed Concrete Association
Presiding Officer: Frank P. Spratlen Jr.

Address of the president.

Report of the executive secretary.

Report of the director of engineering.

Address, "Cement Supply in 1948," Vincent P. Ahearn.

Joint luncheon of National Sand and Gravel Association and National Ready Mixed Concrete Association, 12:30 p. m., Hall of Mirrors.

Presiding officer: A. R. Shiely.

Address, "Our Dynamic Way of Life," Robert S. Wilson, vice-president, Goodyear Tire and Rubber Company.

Afternoon session, 2:30 p. m., Pavillion Caprice.

National Sand and Gravel Association
National Ready Mixed Concrete Association
Presiding officer: Paul C. Graham.

Address, "Construction Activity in the Year Ahead," Thomas S. Holden, president, F. W. Dodge Corporation.

Address, "The Highway Program Ahead," Hal H. Hale, executive secretary, American Association of State Highway Officials. (Mr. Hale will be introduced by Mr. Murray D. Shaffer, director, Ohio Department of Highways.)

Address, "Researches in Portland Cement Concrete," A. Allan Bates, vice-president, Portland Cement Association.

Reception to members by the Manufacturers Division, 5:30-7:30 p. m., Hall of Mirrors.

THURSDAY, JANUARY 22

Morning session, 9:30 a. m., Pavillion Caprice.

National Sand and Gravel Association
National Ready Mixed Concrete Association
Presiding officer: Harris N. Snyder.

Address, "Depletion and Depreciation Practices in the Sand and Gravel and Ready Mixed Concrete Industries," Robert Ash, tax counsel for the two associations.

Address, "What the Taft-Hartley Act Means to the Construction Industry," James D. Marshall, assistant managing director, The Associated General Contractors of America, Inc.

Address, "New Developments in the Federal Labor Policy," Charles A. Horsky, counsel for the two associations.

Luncheon of members of Ohio Ready Mixed Concrete Association, Parlor H.

Luncheon facilities will be provided for all delegates in the Hall of Mirrors, commencing at 12:15 p. m. Tickets must be purchased at the registration desk.

Afternoon session, 2:00 p. m., Pavillion Caprice.

National Sand and Gravel Association
Presiding officer: Thomas E. Popplewell

Address, "Railroad Car Supply in 1948," Caleb R. Megee, vice-chairman, Car Service Division, Association of American Railroads.

Address, "Actions Taken by State Commissions on Intrastate Rates Following Increases in Interstate Rates," Vincent P. Ahearn.

Address, "Effect of Characteristics of Aggregates on Properties of Concrete," Stanton Walker.

Election of officers.

Evening session

"Writing Collective Bargaining Agreements" will be the subject of an open forum evening session commencing at 8:15 p. m. The discussion will be led by Charles A. Horsky and Vincent P. Ahearn. Typical provisions will be considered. The effects of the Taft-Hartley Act will be examined. This session is particularly designed for those delegates of both associations who handle the writing and administration of labor agreements, but all others interested are cordially invited to be present.

FRIDAY, JANUARY 23

Morning session, 9:30 a. m., Pavillon Caprice.

National Ready Mixed Concrete Association
Presiding officer: Robert F. Porter

Address, "Suggestions for Sales Agreements in the Ready Mixed Concrete Industry," Robert C. Collins, chairman, Committee on Merchandising.

Report of Committee on Cost Accounting System for the Ready Mixed Concrete Industry, O'Neal M. Johnson, committee consultant.

Address, "Administration of Collective Bargaining Agreement for Ready Mixed Concrete Industry in Detroit Area," Norman J. Fredericks, secretary-treasurer, Koenig Coal and Supply Company.

Discussion by Ray V. Warren, secretary and treasurer, Ready Mixed Concrete Association of Metropolitan Pittsburgh.

Presentation of safety trophies by Harry F. Thomson, chairman, Safety Committee—Winning companies: large plant class: Frank J. Knight Co., Centerline, Mich. Small plant class: Grand Junction Building Materials Co., Inc., Grand Junction, Colorado.

Luncheon facilities will be provided for all delegates in the Hall of Mirrors, commencing at 12:15 p. m. Tickets must be purchased at the registration desk.

Afternoon session, 2:30 p. m., Pavillion Caprice.

National Ready Mixed Concrete Association
Presiding officer: C. Gray.

Report of association's Committee on Truck Chassis, H. F. Thomson, chairman.

Address, "Correct Application of Motor Trucks to the Ready Mixed Concrete Industry," R. Cass, assistant to the president, White Motor Company.

Address, "Open Forum on Ready Mixed Concrete Specifications and Production Problems." This is to be an informal round-table discussion. It will be opened by brief talks as follows:

"The Revised ASTM Specifications for Ready Mixed Concrete," Stanton Walker.

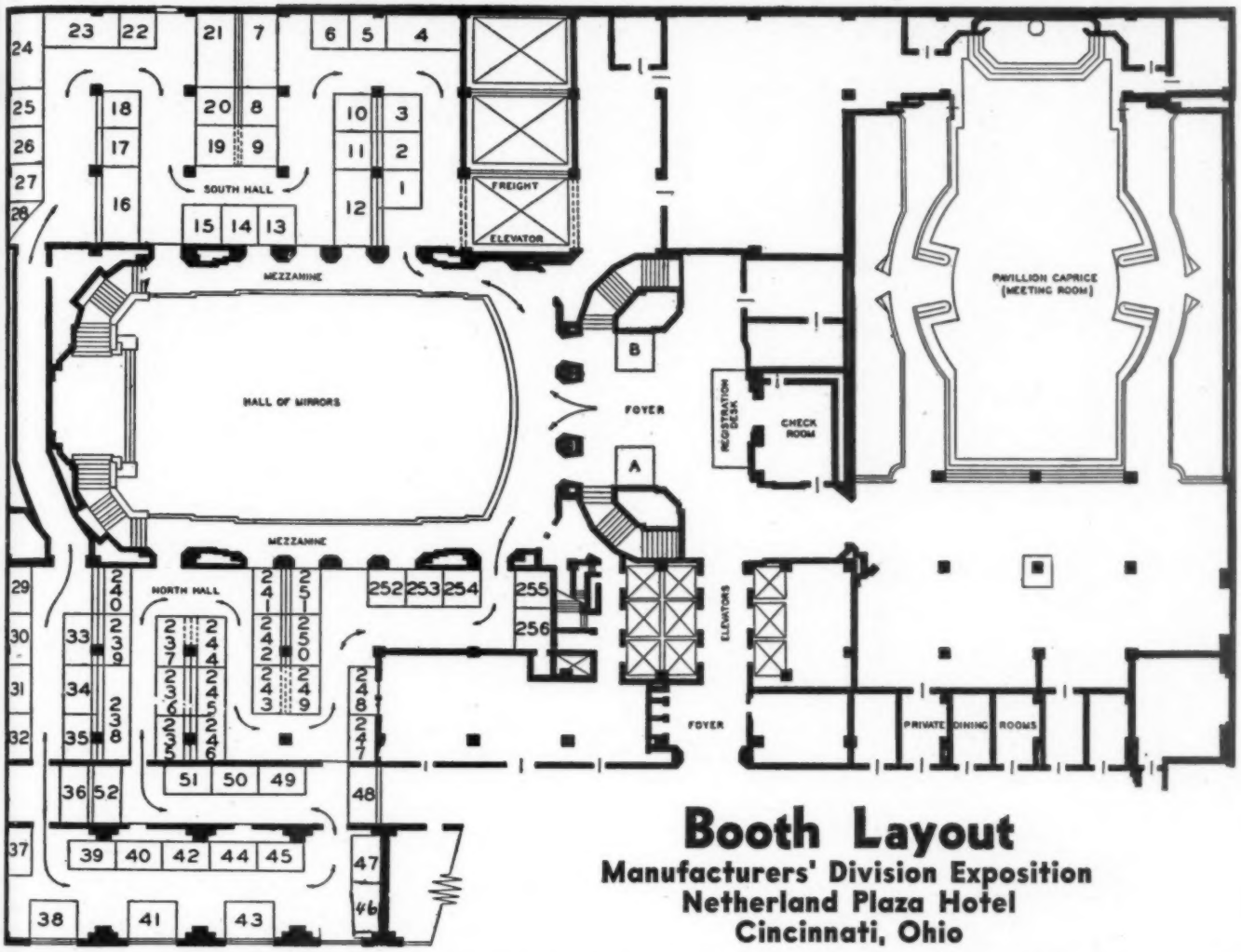
"Use of Ready Mixed Concrete in Highway Construction," J. F. Barbee, assistant engineer of tests, Ohio State Highway Department.

Topics suggested for discussion are: "Measurement of Mixing Water", "Control of Entrained Air; Effect of Length of Haul on Entrained Air", "Accuracy of Batching, With Particular Reference to Cement", "Uniformity of Strength Tests Made Either as Check on or as Basis of Acceptance for Ready Mixed Concrete", "Transportation of Concrete in Non-Agitating Equipment".

Election of officers.

Floor Plan and List of Exhibitors

National Sand and Gravel Assn. and National Ready Mixed Concrete Assn.



Booth Layout

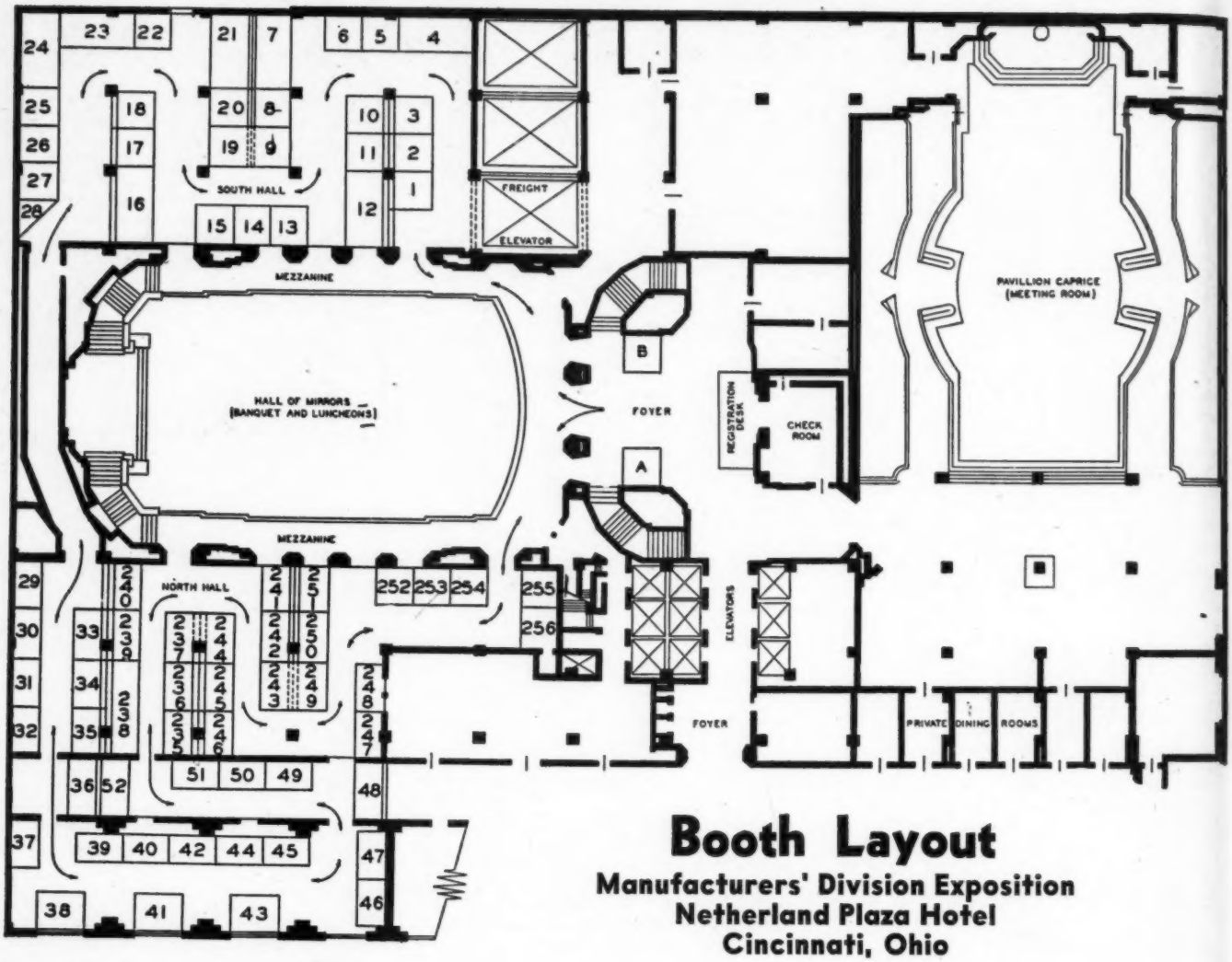
Manufacturers' Division Exposition
Netherland Plaza Hotel
Cincinnati, Ohio

COMPANY — BOOTH

Allis-Chalmers Mfg. Co., Milwaukee, Wis. 24-25-26-27-28
American Hoist & Derrick Company, St. Paul, Minn. 248
American Manganese Steel Division of The American Brake Shoe & Foundry Company, Chicago Heights, Ill. 23
Barber-Greene Company, Aurora, Ill. .. 12
Blaw-Knox Co., Pittsburgh 13-14-15
Bucyrus-Erie Co., South Milwaukee .. 34-35
Butler Bin Company, Waukesha, Wis. . 251
Chain Belt Co., Milwaukee, Wis. 46-47
Concrete Transport Mixer Company, St. Louis, Mo. 46-47
Conserco, Inc., Washington, D. C. 39
Deister Machine Company, Fort Wayne, Ind. 31-32
Dewey & Almy Chemical Company, Cambridge, Mass. 250
Diamond Iron Works, Inc., Mahr Manufacturing Company Division, Minneapolis, Minn. 38
Dravo Corporation, Pittsburgh, Pa. .. 238
Dumpcrete Division, Maxon Construction Company, Dayton, Ohio 52
Eagle Iron Works, Des Moines, Iowa .. 247
General Electric Company, Schenectady, N. Y. 255-256
Gruendler Crusher and Pulverizer Company, St. Louis, Mo. 42
George Haiss Manufacturing Company, Inc., Bronx, N. Y. 41
Harristeel Products Company, New York, N. Y. 43
Hendrick Manufacturing Company, Carbondale, Pa. 4
Hercules Steel Products Corporation, Galion, Ohio 51
Insley Manufacturing Company, Indianapolis, Ind. 37
Iowa Mfg. Co., Cedar Rapids 16
The Jaeger Machine Company, Columbus, Ohio 46-47
C. S. Johnson Co., Champaign, Ill. 244
Kensington Steel Co., Chicago, Ill. 17-18
Koehring Co., Milwaukee, Wis. 245-246
A. Leschen & Sons Rope Company, St. Louis, Mo. 29-30
Lima Shovel and Crane Division, Lima-Hamilton Corp., Lima, Ohio 242
Link-Belt Company, Chicago, Ill. ... 1-2-3
Ludlow-Saylor Wire Co., St. Louis 240
Marion Power Shovel Co., Marion, O. .. 6
Master Builders Co., Cleveland 252-253-254
McLanahan & Stone Corporation, Hollidaysburg, Pa. 235
New Holland Manufacturing Company, Mountville, Pa. 44-45
Nordberg Mfg. Co., Milwaukee, Wis. .. 33
Pioneer Engineering Works, Inc., Minneapolis, Minn. 10-11
Pit and Quarry, Chicago, Ill. ..... B
Precision Instrument Sales Company, St. Louis, Mo. 49
Ransome Machinery Company, Dunellen, N. J. 46-47
Robins Conveyors Div., Hewitt-Robins, Inc. Passaic, N. J. 9-19
Rock Products, Chicago, Ill. ..... A
John A. Roebling's Sons Company, Trenton, N. J. 20
Sauerman Bros., Inc., Chicago, Ill. 8
Screen Equipment Co., Buffalo, N. Y. . 241
Simplicity Engineering Company, Durand, Mich. 243-249
T. L. Smith Co., Milwaukee, Wis. 46-47
Smith Engineering Works, Milwaukee, Wis. 21
Stedman's Foundry & Machine Works, Aurora, Ind. 22
W. O. & M. W. Talcott, Inc., Providence, R. I. 239
Taylor-Wharton Iron & Steel Company, High Bridge, N. J. 5
Thew Shovel Co., Lorain, O. 236-237
Truck Mixer Manufacturers Bureau, Washington, D. C. 46-47
The W. S. Tyler Co., Cleveland, Ohio .. 7
Universal Engineering Corporation, Cedar Rapids, Iowa 36
White Motor Co., Cleveland 48

Floor Plan and List of Exhibitors

National Crushed Stone Assn.
Agricultural Limestone Division



Booth Layout

Manufacturers' Division Exposition
Netherland Plaza Hotel
Cincinnati, Ohio

COMPANY	BOOTH
Allis-Chalmers Mfg. Co., Milwaukee	24-25-26-27-28
American Cyanamid Co., New York	20
American Manganese Steel Div., Amer. Brake Shoe Co., Chicago Heights, Ill.	23
Atlas Powder Co., Wilmington, Del.	13-14
Bacon-Pietsch Co., Inc., New York	48
Barber-Greene Co., Aurora, Ill.	12
Bucyrus-Erie Co., South Milwaukee, Wis.	34-35
Cummins Engine Co., Columbus, Ind.	38
Deister Machine Co., Fort Wayne, Ind.	31-32
Diamond Iron Works, Inc., Minneapolis	254
E. I. DuPont de Nemours & Co., Inc., Wilmington, Del.	238
Easton Car & Construction Co., Easton, Pa.	29-30
Euclid Road Machinery Co., Cleveland	39-40
Frog, Switch & Mfg. Co., Carlisle, Pa.	8
General Electric Co., Schenectady, N. Y.	255-256
Gruendler Crusher & Pulverizer Co., St. Louis	42
George Haiss Mfg. Co., Inc., New York	41
Harnischfeger Corp., Milwaukee	49-50-51
Harristeel Products, New York	43
Hendrick Mfg. Co., Carbondale, Pa.	4
Hercules Powder Co., Wilmington, Del.	247-248
Insley Mfg. Co., Indianapolis	37
Iowa Mfg. Co., Cedar Rapids, Ia.	16
Jeffrey Mfg. Co., Columbus O.	252-253
Kennedy-Van Saun Mfg. & Eng. Corp., New York	15
Kensington Steel Co., Chicago	17-18
Keystone Driller Co., Beaver Falls, Pa.	46-47
Koehring Co., Milwaukee	245-246
Lima-Hamilton Corp., Lima, O.	242
Link-Belt Co., Chicago	1-2-3
Ludlow-Saylor Wire Co., St. Louis	240
Marion Power Shovel Co., Marion O.	6
McLanahan & Stone Corp., Hollidaysburg, Pa.	235
New Holland Machine Co., New Holland, Pa.	44-45
Nordberg Mfg. Co., Milwaukee	33
Northern Blower Co., Cleveland	22
Pioneer Engineering Works, Inc., Minneapolis	10-11
Pit and Quarry, Chicago	B
Robins Conveyors Division—Hewitt Robins, Inc., Passaic, N. J.	9-19
Rock Products, Chicago	A
Sanderson-Cyclone Drill Co., Orrville, O.	244
Screen Equipment Co., Buffalo, N. Y.	241
Simplicity Engineering Co., Durand, Mich.	243-249
Smith Engineering Works, Milwaukee	21
W. O. & M. W. Talcott, Inc., Providence, R. I.	239
Taylor-Wharton Iron & Steel Co., High Bridge, N. J.	5
Thew Shovel Co., Lorain, O.	236-237
Traylor Eng. & Mfg. Co., Allentown, Pa.	250-251
W. S. Tyler Co., Cleveland	7
Universal Engineering Corp., Cedar Rapids, Ia.	36
Vibration Measurement Engineers, Chicago	52

Preliminary Convention Program

Netherland Plaza Hotel, Cincinnati, Ohio

National Crushed Stone Assn., January 26-28
Agricultural Limestone Division, January 29-30

National Crushed Stone Association
Program Outline for 31st Annual Convention

MONDAY, JANUARY 26

The convention opens on Monday morning, January 26, with greetings from the president. This will be followed by a report from the president on business conditions during 1947 and the outlook for 1948, prepared on the basis of information submitted by the regional vice-presidents.

Reports will then be received from A. T. Goldbeck, engineering director, J. E. Gray, field engineer, and J. R. Boyd, administrative director. Presentation of safety awards to the winners of the 1946 National Crushed Stone Association Safety Contest will then be made by F. J. Buffington, safety engineer, the New York Trap Rock Corporation, and chairman of the Cement and Quarry Section of the National Safety Council.

The concluding paper of the morning session will be entitled "The Work and Unity Plan," presented by Robert W. Watt, manager, publicity and research department, New Jersey Manufacturers Association.

The luncheon address at the Greeting Luncheon on Monday will be made by the Honorable James E. Stewart, former mayor of Cincinnati, and currently a justice of the Ohio State Supreme Court.

Monday afternoon will be devoted to operating men and equipment manufacturers and will be opened by a paper entitled, "Churn Drill Exploration," by J. R. Thoenen, chief, Tuscaloosa Division, Mining Branch, United States Bureau of Mines, at University, Alabama. Following this the balance of the afternoon will be devoted to a general discussion of operating problems on a selected group of topics submitted by operating men.

At 6 p. m. on Monday there will be a cocktail party for everyone in attendance at the convention, followed by a buffet supper, after which there will be a formal inspection of the Manufacturers' Division Exposition from 7:30 until 10:30 p. m.

TUESDAY, JANUARY 27

The Tuesday morning session will be opened with a paper entitled "The Effect of Aggregates on the Durability of Concrete," by an eminent authority in this field.

Following this there will be, according to present plans, a paper entitled "Selecting Your Salesmen," by an outstanding speaker. One additional formal presentation is scheduled for Tuesday morning. The remainder of the morning will be devoted to the annual business meeting of the association, including reports of committees, the election of officers and the board of directors, and the greeting of the president-elect.

At 1 p. m. on Tuesday the Manufacturers' Division will hold its annual business meeting at a luncheon. This is not a general luncheon, but solely a business meeting of the members of the Manufacturers' Division.

All of Tuesday afternoon is left free for an inspection of the Manufacturers' Division Exposition.

Tuesday evening is open, with the exception that a meeting is being arranged by Mr. Buffington, to begin about eight o'clock, for all those interested in accident prevention. This is a new experiment and is designed to afford those wishing to exchange ideas in the field of accident prevention the opportunity to do so. It should be well attended.

WEDNESDAY, JANUARY 28

The Wednesday morning session will also be devoted entirely to operating men and equipment manufacturers, giving them two full sessions in addition to the time available for the inspection of the exposition. This session will be a panel discussion on the important subject of "Delayed Action Blasting." It will be opened by the eminent authority in this field, Dr. L. Don Leet, and participating in the panel will be Jules E. Jenkins of Vibration Measurement Engineers; Harold Williams, Boston, Mass.; L. F. Miller of the New York Trap Rock Corporation; and representatives of the manufacturers of explosives who are members of the Manufacturers' Division.

Should there be any time remaining in the morning session after the panel discussion has been exhausted, it will be devoted to a general discussion of operating problems.

The general luncheon on Wednesday, sponsored by the Manufacturers' Division, will be addressed by Judge R. V. Fletcher, special counsel of the Association of American Railroads, on the subject, "The Crisis in Railroad Transportation."

The opening talk at the Wednesday afternoon session will be entitled "The Modern Macadam Road," and will be presented by Fred Swineford, engineering director, Macadam Pavements, Inc., of Columbus, Ohio. Mr. Swineford will be followed by John C. Gall, whose subject will be "Labor-Management Relations Act of 1947 (Taft-Hartley Act)". Tied in with the Taft-Hartley Act will be a paper entitled "Revised Interpretations Under the Wage-Hour Law and Their Significance With Respect to the Taft-Hartley Act," by an authority on this subject.

The customary reception for everyone in attendance at the convention will then be held on Wednesday evening at six o'clock, following which the 31st annual banquet of the National Crushed Stone Association and the 3rd annual banquet of the Agricultural Limestone Division will be held. The featured speaker for the banquet will be the Honorable Josh Lee, former United States Senator from Oklahoma and currently a member of the Civil Aeronautics Board. Josh Lee is a nationally known humorist and philosopher, and while there will be serious aspects to his talk, he will concentrate on the humorous side. He is author of a clever book on "How to Hold an Audience Without a Rope," and will probably put his teachings into practice in addressing the banquet.

Agricultural Limestone Division Program for
3rd Annual Convention

THURSDAY, JANUARY 29

The program for the 3rd annual convention of the Agricultural Limestone Division of the National Crushed Stone Association, which will be held on January 29 and 30, at the Netherland Plaza Hotel, Cincinnati, Ohio, will be a "bell ringer." Seven prominent speakers—all leaders in their fields—have agreed to address the meeting.

Those who attended the convention in 1946 remember Tom Kelly, the chalkie-talkie man, who does such a marvelous job of chalk-talking about soil conservation. He will speak at the greeting luncheon on "There's More to Dirt Than Meets the Eye."

FRIDAY, JANUARY 30

At the luncheon on the second day Charles F. Brannan, Assistant Secretary of Agriculture, will explain the long-range farm program which has been recommended for congressional action by the U. S. Department of Agriculture.

Other authoritative speakers will be Dr. C. E. Brehm, Acting President of the University of Tennessee, on "What Is Ahead for the Farmer"; Robert H. Engle, of the National Fertilizer Association, on the use of movies in educational work; Dr. Robert E. Yoder, of the Ohio Agricultural Experiment Station, on "Liming Ohio Soils"; W. C. Johnstone, of the Kentucky Agricultural Experiment Station, on the use of Limestone in soil improvement; and Judd C. Benson, of the Union Central Life Insurance Co., on "Selling in a Competitive Market."

Rock Dusting Bulletin Issued By U. S. Bureau of Mines

A bulletin which thoroughly covers the subject of rock dusting in mines, issued by the U. S. Bureau of Mines, includes such topics as: the revised Federal Mine Safety Code, various state laws on the use of water and rock dust, specifications for rock dust, how to rock-dust mines by machine and by hand and sampling rock-dusted coal dust.

Listed also are producers who will supply rock dust. The Bureau of Mines announces that it will place on file the names of any other producers who are able to provide rock dust. The bulletin, Information Circular 7421, is entitled *Use of Rock Dust and Water under the Federal Mine Safety Code in Limiting Coal-Dust Explosions.*

Limestone Circular Issued By U. S. Mines Bureau Chief

A U. S. Bureau of Mines circular surveying the production, consumption, and uses of limestone—one of the nation's basic building materials—was recently released by Bureau Director James Boyd.

Varieties of limestone produced in the United States, the types of products made from the stone, the centers of production, and economic conditions are discussed in the circular.

A copy of Information Circular 7416, *Limestone As A Building Material* by Oliver Bowles, former chief of the Bureau's Nonmetal Economics Division, and Nan C. Jensen, of the same division, may be obtained free by writing to the Bureau of Mines, Publications Section, 4800 Forbes St., Pittsburgh 13, Pa.

New Record Volume of Cement Output Strains Rapidly Growing Plant Capacity

1947 Volume Exceeds 1942 Records and 1948 May Be Even Better

IN 1947 the portland cement industry in the United States repeated its performance of 1946, both production and shipments far exceeding the most optimistic estimates made at this time last year.

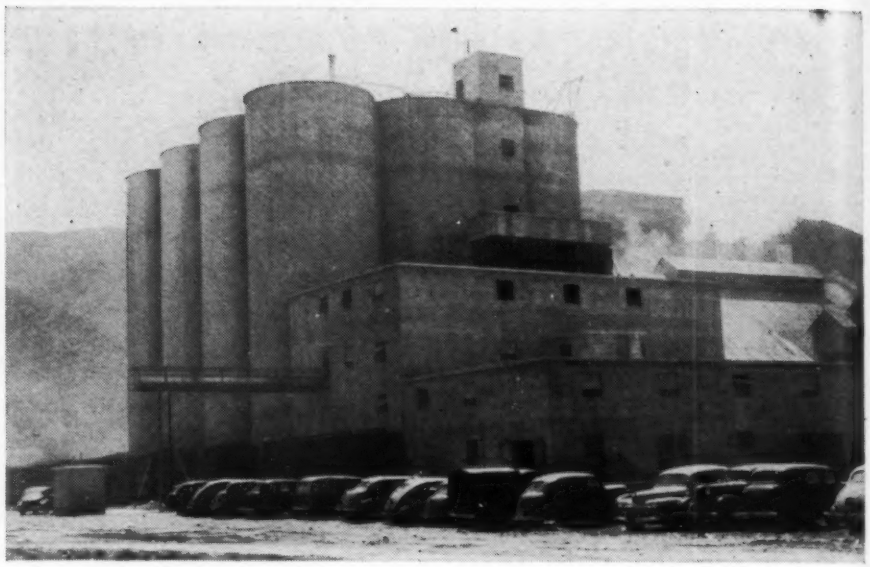
By WALTER E. TRAUFFER

Complete figures are as yet available only through October but it seems certain that production was about 186,000,000 bbl., 13 percent over the 163,805,000 bbl. volume of 1946. Shipments were about 188,000,000 bbl., 12 percent over the 168,336,000 bbl. shipped in 1946. Production and shipments both set new all-time records, exceeding the former 1942 record volume by about 2 percent in each case.

The production record, set in spite of serious handicaps inside and outside the industry, again fell far short of shipments. Shipments again fell far short of actual demand with the result that there were severe temporary shortages in some areas and there was also some black-market selling outside the industry. Apparently, however, there was less of this than in 1946.

The chief handicaps to production were much the same as in 1946. Fuel shortages were less severe and in coal-burning areas were due more to lack of transportation facilities than to labor troubles. To the coal shortage was added, however, a growing shortage of fuel oil which is already handicapping producers in California, the Southwest and along the Gulf Coast. Shortages of equipment and supplies, and delays in getting repair parts, continued to hamper producers and there was still a shortage of labor, but less than in 1946. There was only one important strike, in May, which involved 7500 workers in the Lehigh and Hudson Valley districts. This strike lasted 20 days and caused serious temporary shortages in the East and Northeast.

The chief handicap in shipments during 1947 was the growing shortage of freight cars which still seems far from being solved. Latest advices indicate that the car pool has now about reached its lowest point and that henceforth new cars will be built faster than old ones are retired. It will be a long pull, however, if freight shipments continue to increase in 1948 as they did in 1947.



• A general view of the Ideal Cement Company's new storage silos and packhouse at Devil's Slide, Utah.

Stocks on hand at the mills, recovering rapidly from the dangerously low level of 7,301,000 bbl. at the end of October, 1946, reached a peak of 22,184,000 bbl. at the end of March 1947. Stocks then began to drop at an increasing rate as the tremendous demand outstripped the ability to produce. At the end of October the stocks totalled only 5,659,000 bbl., probably the low for the year, and the lowest in modern history.

FUTURE PROSPECTS

The prospects for the cement industry in 1948 are, of course, uncertain and any predictions we might make could miss the mark considerably should there be any one of several possible developments in the world or economic picture. The national construction picture, as described in detail elsewhere in this issue, indicates that the dollar volume of construction in 1948 will be considerably above the 1947 total; 1947, however, fell considerably short of the heights generally predicted a year ago. A new record for dollar volume of construction may be set in 1948 but apparently only because construction costs have increased so sharply in the last few years.

In any case all indications point to a further increase in demand in 1948 which should put the volume of cement shipments and of production at new all-time highs.

The cement industry, as is pointed out in more detail elsewhere in this issue, considerably increased its productive capacity in 1947, through the addition of one "new" plant, the resumption of production by two plants which had been idle for years, and the expansion of many others. This added capacity far outweighed the loss due to the closing down of three other plants.

Nearly all of this work was delayed by shortages, strikes, etc., and this will apparently also be the case in 1948.

According to authoritative sources the expansion in 1948 will be at least as great. At least three new plants are expected to go into operation and most of the important expansion programs now under way will be completed. Details on some of the 1947 expansions and those under way or planned follow. Additional projects are under consideration which will probably be announced during the year.

LOSSES

The losses in production in 1947 were occasioned by the closing down of three small plants which had been producing more or less steadily. Two of these may be dismantled and shipped abroad. Details follow.

Wolverine On April 30, 1947, the Wolverine Portland Cement Co., with plants at Coldwater and Quincy, Mich., was ordered by the Federal Court to cease operations after the clinker already produced had been ground. The company had earlier filed a petition requesting a reorganization. The latest advices are that an order has been entered in Federal District Court authorizing the sale of assets to Soper Engineers, a Panama company, for $490,000. The two plants will be dismantled and reassembled in South America.

Penn-Dixie The Pennsylvania-Dixie Portland Cement Co. several months ago announced the closing for an indefinite period of its plant at Portland Point, N. Y. The plant was said to have operated at a loss for the past 15 years and suffered from a shortage of workers, obsolete equipment, etc.

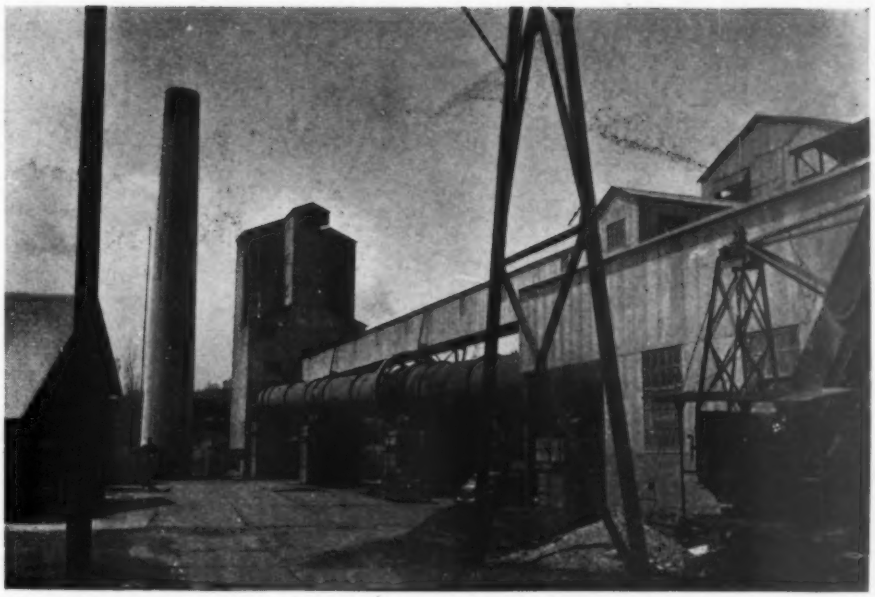
GAINS

As in 1946 there were no completely new plants put in operation during the year. The only plant added was a reconverted alumina plant, that of the Ideal Cement Co. at Mobile, Ala., which was actually converted in 1946 but did not get into volume production until early in 1947.

Production was resumed in 1947 at two old plants which had been shut down, that of the Pacific Portland Cement Co. at San Juan Bautista, Calif., and of the Riverside Cement Co. at Oro Grande, Calif.

Ideal Considerable progress was made during the year on the $10,000,000 new plant and improvement program of the Ideal Cement Co. which will affect all but two of the company's eight plants. When completed the capacity of these plants will have been increased 4,200,000 bbl. annually.

Early in 1947 a new storage and packing plant was completed at the Union Portland Cement Co. plant at Devil's Slide, Utah. The construction of a complete new 1,000,000-bbl. plant at this location is also well under way and will be completed in 1948. The new 1,200,000-bbl. plant to be built alongside the present plant of the Colorado Portland Cement Co. at Portland, Colo., is also well under way. A kiln and new raw- and finish-grinding mills are being installed at the Gulf Portland Cement Co. plant at Houston, Texas, and a similar installation has been made at the Arkansas Portland Cement Co. plant at Okay, Ark. At the Ada, Okla., plant of the Oklahoma Portland Cement Co. and the Trident, Montana, plant of the Three Forks Portland Cement Co. the grinding departments are being expanded.



• General view of the new kiln installation at the Northampton, Pa., plant of Lawrence Portland Cement Co. Two induced-draft fans discharge into the stack at the left.

Much of the equipment being installed at these plants, including all of the kilns, came from the Mobile, Ala., plant, a converted war-time alumina plant which began shipping cement early in 1947. This plant originally had eight 9½- by 250-ft. kilns.

Lawrence Early in 1947 the Lawrence Portland Cement Co. completed an important improvement program at its Siegfried, Pa., plant. This included the installation of two new 9- by 314-ft. Smidth kilns equipped with Unax coolers, which are said to be the longest dry-process kilns in existence. They replace four old kilns 7 and 9 ft. in diameter and 150 to 180 ft. in length. The new kilns are fired by Smidth Tirax mills, and separate Multiclones collect the kiln dust ahead of the new 150-ft. Rust reinforced-concrete stack. The new equipment was designed to fit into the other existing departments and the changeover was made with very little loss of production. The present capacity of 3200 bbl. daily is slightly lower than that of the equipment replaced.

This plant had operated on purchased stone since July 9, 1945, when its quarry was inundated by a flash flood. The tremendous job of removing 1½ billion gal. of water and thousands of tons of silt from the 260-ft.-deep quarry was completed late in 1946 at a cost of $150,000, just in time for the completion of the improvement program.

The quarry which supplies the company's wet-process plant at Thomaston, Maine, is also undergoing improvement.

Oregon The Oregon Portland Cement Co. has completed the major improvement program which has more than doubled the original 1150-bbl. daily capacity of its plant at Oswego, Ore. The additions practically constitute a second complete plant alongside the original one. The new equipment includes an 8- and 9- by 287-ft. Smidth all-welded steel kiln with Unax cooler, a Cottrell electrical precipitator for both kilns, a Pennsylvania hammer-mill, two 8- by 36-ft. Unidan mills, one raw and one finish, new slurry basins, etc. The total cost of these improvements was over $1,250,000.

Dewey The Dewey Portland Cement Co. has practically completed the extensive program of modernization at its Davenport, Iowa, plant. This includes new shovels in the quarry, a new packhouse, dust collectors, extension of the river dock and the materials storage, new kiln ends and Allis-Chalmers air-quenching clinker coolers, remodeling of the crushing and screening plant, etc.

North American Little information is available on the extensive improvement programs under way at the Alsen and Howes Cave, N. Y., and Security, Md., plants of the North American Cement Corp. The Howes Cave plant is reported to have gone back

• The "Permanente Silverbow" in port at Long Beach with its first cargo of raw gypsum for the processing plant.

into production for the first time since 1942. The burner building was rebuilt and direct-firing bowl mills were installed.

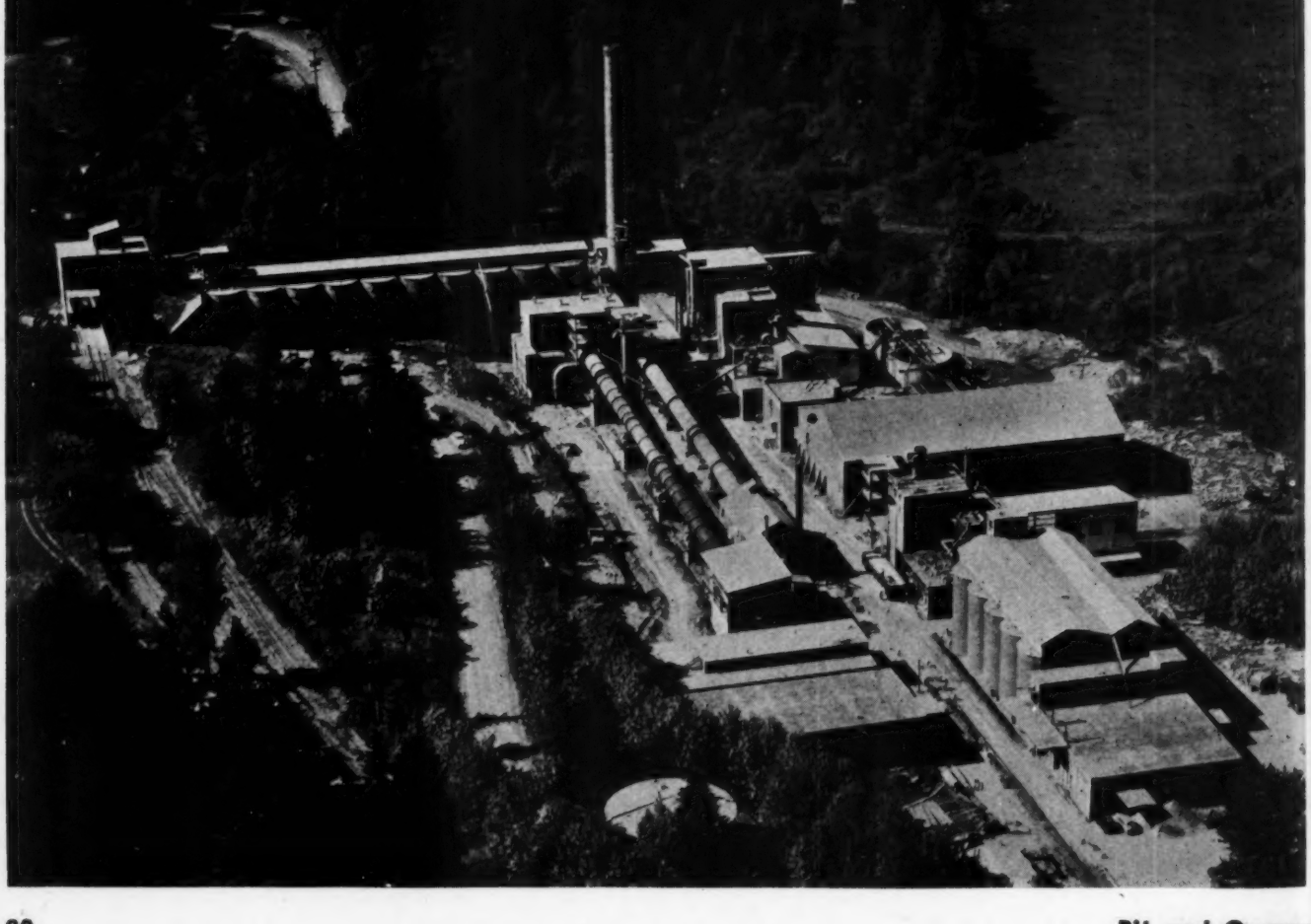
An extensive program is under way at Alsen which includes the installation of a new 340-ft. kiln. Stone and Webster is doing the construction work.

Permanente The Permanente Cement Co. again contributed heavily to the increase in capacity. Late in the year the expansion program at the Los Altos, Calif., plant added 500,000 bbl. to the plant's 5,000,000-bbl. capacity at a cost of over a million dollars. The work done included changes in the raw-grinding department, the installation of Fuller inclined-grate clinker coolers on each of the four kilns, an additional kiln-feed slurry tank, new clinker coveying and crushing facilities, additional cement-pumping equipment under the storage silos and enlargement of the packhouse.

The company's production will be further enhanced with the recent agreement under which Permanente will operate the plant of the Pacific Coast Cement Co. at Seattle, Wash., which has a capacity of 1,000,000 bbl. annually. It will be operated as the Diamond Division of Permanente. The limestone for this plant comes from a deposit in Alaska and is transported by the S. S. *Diamond Cement*. With its recently-established storage and packing facilities at Seattle, Wash., Merced, Calif., and Honolulu, and its bulk-loading and shipping facilities at Redwood City on San Francisco Bay, Permanente is now well situated for shipments almost anywhere in the Pacific.

The company also recently completed the conversion of the 10,800-ton ship *Silverbow Victory* which was purchased from the Maritime

• Aerial view of the Oswego plant of the Oregon Portland Cement Company, taken a few months ago, as improvements neared completion. The new 287-ft. rotary kiln may be seen just to the left of the old, shorter kiln.



Commission and has been renamed the *Permanente Silverbow*. This ship was converted at Kaiser's Swan Island shipyard to carry cement, limestone, gypsum, etc. It has an unloading capacity of 2000 bbl. of cement or 500 tons of crushed rock per hour. Tunnel scrapers are used and a complete dust-collecting system has been installed.

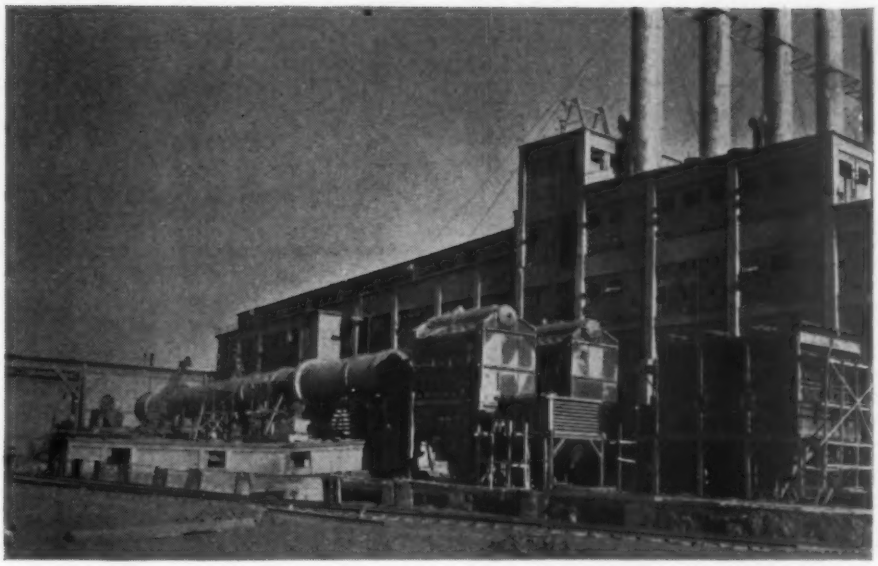
General Early in 1947 the General Portland Cement Co. was formed by the merger of the Florida Portland Cement Co., the Signal Mountain Portland Cement Co., and the Trinity Portland Cement Co. This gives General five plants which are located at Tampa, Fla.; Chattanooga, Tenn.; Houston, Fort Worth and Dallas, Texas. At Tampa a 12- by 426-ft. kiln and related equipment is being installed and is expected to be in operation soon. This kiln is expected to double the capacity of the plant, bringing it up to about 3,000,000 bbl. annually. A flotation department is also being installed.

Huron The Huron Portland Cement Co. has made rapid progress with the expansion program under way at its plant at Alpena, Mich., and is expected to have it completed early in 1948. This program will increase the capacity of the plant about 50 percent to an annual figure of about 6,200,000 bbl. which is expected to make it the largest single cement-producing plant in the world.

The four new 10- by 153½-ft. kilns (two Allis-Chalmers and two Vulcan) being installed will supplement the existing eight 8- by 110-ft. and six 10- by 153-ft. kilns. Few changes are necessary in other departments of the plant, as most of the increased demand will be taken care of by longer operating hours. Eight new Bradley-Hercules mills will be installed for preliminary finish grinding, four of them already being in operation. Raymond direct-firing coal mills are being installed for the new kilns, as are also Fuller grate-type clinker coolers. Fuller coolers were installed on the existing kilns several years ago.

Huron electrical precipitators are being installed on the new kilns. The fourteen existing kilns are equipped with waste-heat boilers and Wickes 1000-hp. boilers are being installed on the new kilns. In the raw-grinding department a 7- by 26-ft. 2-compartment mill is being installed to supplement the eight already in use.

The company is well equipped to handle this huge output of cement, having early in 1947 completed a $310,000 program of harbor and dock improvement. The harbor was widened and deepened, the old breakwater was removed and a new breakwater and dock were built. Almost the entire output of this plant is shipped by water in a fleet of company-owned boats and wide distribution is obtained through twelve storage and packing plants strategically located on the Great Lakes.



• This construction view of the Huron Portland Cement Company's plant at Alpena, Mich., shows two of the four new kilns already on their piers. Waste heat boilers and electrical precipitators for the two kilns are also in position.

Missouri The Missouri Portland Cement Co. is reported to be progressing with the construction of a new plant alongside its present plant at Prospect Hill, near St. Louis, Mo. Heavy grading for the site has been completed. It will be a closed-circuit wet-process plant with two 3,000-bbl. kilns.

Early in 1947 the company completed the construction of a new 90,000-bbl. capacity storage and distributing plant at Memphis, Tenn., which receives bulk cement by barge from the St. Louis plant for distribution. Plans are also being made to modernize the company's plant at Independence, Mo.

Giant A potential added capacity of 800,000 bbl. annually developed when the Giant Portland Cement Co. recently acquired the Ancor alumina plant at Harleyville, S. C. This property was declared surplus early in the year and bids were taken in July with Giant proving to be the highest bidder. The new owners have taken possession and production is expected to begin late in 1948. Considerable construction and rebuilding will be necessary. This new producing plant is expected to alleviate the cement shortage in that area and will give the Carolinas, at long last, a native source of supply.

Louisville The Louisville Cement Co., Speed, Ind., is making good progress with its 3-year $1,500,000 improvement program on which work was begun early in 1946. Already installed are two new waste-heat boilers, a remodeled and expanded packing department, F. L. Smidth coolers, Babcock & Wilcox direct-firing coal mills, Fuller-Kinyon air lifts and constant-level feeders, etc. Under way are new rock storage silos and grinding department, changes in the crushing department, new dust collectors, etc.

Lone Star Early in 1947 the Lone Star Cement Corp. announced a $1,000,000 improvement program for its plant at New Orleans, La., which is now well under way, and which will increase its capacity 50 percent to about 2,200,000 bbl. annually. Dust collectors have already been installed, a 385-ft. kiln will be installed, along with additional grinding equipment, a kiln stack, etc.

At others of its plants improvements have been or are being completed, especially in the cement packing and storage departments. Among the plants affected are those at Dallas and Houston, Texas; Birmingham and Spocari, Ala.; Bonner Springs, Kans.; Greencastle, Ind.

Marquette Early in the year the Marquette Cement Mfg. Co. announced the purchase

of the plants of the Hermitage Portland Cement Co. at Nashville and the Cumberland Portland Cement Co. at Cowan, Tenn. These companies, it was announced, would remain intact, retaining their identities, staffs, brand names, etc., but would operate under Marquette direction. These additions to its other three plants considerably expanded Marquette's capacity and marketing area. Improvements to these plants are planned and two Strong-Scott coal mills have already been ordered for the Hermitage plant.

At the Des Moines plant satisfactory progress is being made on the extensive program of modernization which will make this practically a new plant. Nearly every department of the plant, from the quarry to the packhouses, will be affected.

At Oglesby the company has made a number of minor improvements and has practically completed the installation of additional dust collectors.

Lehigh The Lehigh Portland Cement Co. early in 1947 announced a $750,000 program of improvement for its plant at Sandt's Eddy, Pa. Included are unit coal pulverizers, an extension to the stone storage building, a new change house, and a new type of electrical precipitator for the collection of stack dust. At Birmingham, Ala., fourteen new cement-storage silos were built. Quarry and plant improvements were also made at the Mitchell, Ind., and Iola, Kans., plants. Most of this work is part of a $4,000,000 program announced by the company late in 1946 and will affect, in addition to those already mentioned, the company's plants at Oglesby, Ill.; Union Bridge, Md.; Cleveland, Ohio; Buffalo, N. Y.; and Mason City, Iowa.

Olympic The Olympic Portland Cement Co., Ltd., is proceeding rapidly with the installation of a new 11- by 410-ft. kiln at its plant at Bellingham, Wash. It is expected to be in operation early in 1948. This kiln will have a capacity of 3000 bbl. daily, 10 percent more than the three smaller kilns it replaces. These 200-ft. kilns will be kept in stand-by condition. Other improvements are also being made.

Calaveras The Calaveras Cement Co., San Andreas, Calif., has announced that it will spend about $1,000,000 during the next two years to further improve its plant. Several grinding mills are already being installed.

Monolith The installation of new kilns is under way at the Monolith, Calif., plant of the Monolith Portland Cement Co.

Santa Cruz The Santa Cruz Portland Cement Co., Santa Cruz, Calif., has completed the installation of the Cottrell electrical precipitator which it obtained from the late Cowell plant. The installation of a third Lepol kiln has nearly been completed.

Riverside The Riverside Cement Co. has completed the rebuilding of its plant at Oro Grande, Calif. Included are two new kilns, 9½- by 250-ft. and 10- by 300-ft., and two Fuller inclined-grate clinker coolers. Additional grinding and other equipment has also been installed. An important program of expansion is planned for the plant at Riverside.

Southwestern The Southwestern Portland Cement Co. has completed the installation of Buell dust collectors on the four kilns at its Victorville, Calif., plant. Other improvements have also been made. Major improvements are reported to be under way at El Paso, Texas, and Osborn, Ohio. It is also reported that plans are being revived to build a new plant at Bernalillo, New Mexico, 20 miles north of Albuquerque.

South Dakota The improvement program at the South Dakota State Cement Plant, Rapid City, S. D., is progressing. It is reported that proposals are being made to build a second plant to supplement it.

Pacific The Pacific Portland Cement Co. early in 1947 reopened its 2,000-bbl. plant at San Juan Bautista, Calif., which had been held in standby condition since 1943. A program of improvement and expansion for both its plants has been announced.

Superior The Superior Cement Corp., Superior, Ohio, is building a new $120,000 packhouse to replace the one destroyed by fire last year.

Universal Atlas The Universal Atlas Cement Co. installed a Cottrell precipitator on its two 300-ft. kilns at Leeds, Ala. A

• An aerial view of the Arkansas (Ideal) Portland Company's plant at Okay, Ark., showing the new kiln in operation.

similar installation is being made at the Northampton, Pa., plant. New Babcock & Wilsox mills have been installed at Independence, Kansas.

Alaska Alaska will have its first cement plant soon when the new 600-bbl. operation of the Alaska Cement Corp. near Seldovia is completed. The plant is being built at a reported cost of $1,250,000, using equipment from the defunct plant of the Washington-Idaho Lime Products Co., Orofino, Idaho.

Monarch The Monarch Cement Co., Humboldt, Kans., early in 1947 announced plans for a large-scale rebuilding program to extend over several years. The machine shops are first to be remodeled and then a new kiln will be installed to treble the present capacity.

Aetna The Aetna Portland Cement Co., Bay City, Mich., has nearly completed its important expansion program, which includes a new Allis-Chalmers kiln, Fuller cooler, silos, packhouse, etc.

Alpha The Alpha Portland Cement Co. is modernizing its plant near St. Louis, Mo., at a reported cost of $500,000. A complete new dust collecting system is included.

Medusa The Medusa Portland Cement Co. is reported to be installing a new kiln and other equipment at York, Pa.

Diamond The capacity of the Diamond Portland Cement Co., Middle Branch, Ohio, is being increased by the installation of a third kiln. All necessary facilities are being erected by the Rust Engineering Co.

Kosmos The Kosmos Portland Cement Co., Kosmosdale, Ky., has replaced four old waste-heat boilers with new ones.

San Antonio The San Antonio Portland Cement Co., San Antonio, Texas, installed a new 3600-hp. Nordberg diesel engine in its power plant, which was already the largest in the industry.

Green Bag The Green Bag Cement Co., Neville Island, Pa., installed Fuller grate coolers on its two kilns. The packhouse is being revamped and six new packers are being installed. Additional clinker grinding equipment will be installed.

Ford Rumors have been flying for the past year or more about the Ford Motor Co. plant at Dearborn, Mich. This was variously reported to be scheduled to go to China, the Philippines, South America, Mexico, Greece, etc. It is now reported that this plant will continue to manufacture roasted dolomite for the present. Future plans are not known.

Tex-Mex It is reported that the Tex-Mex Cement Co. has stopped construction on its new plant at Corpus Christi, Texas, which was well under way, and has offered this property for sale. This 4,000-bbl. plant was being equipped partly from a government-owned alumina plant at East St. Louis, Ill. Another plant was also to be built at Chichiriviche, Venezuela, by Cementos Falcon, S. A., another Erle P. Halliburton subsidiary.

Columbia Early in 1947 Otto C. Frei, formerly president of the Washington-Idaho Lime Products Co., Orofino, Idaho, announced the permanent termination of operations at this 600-bbl. daily cement plant. At the same time he announced the formation of the Columbia Portland Cement Co. of Spokane, Wash., formed to build a new 1500-bbl. plant near that city, at a cost of $800,000.

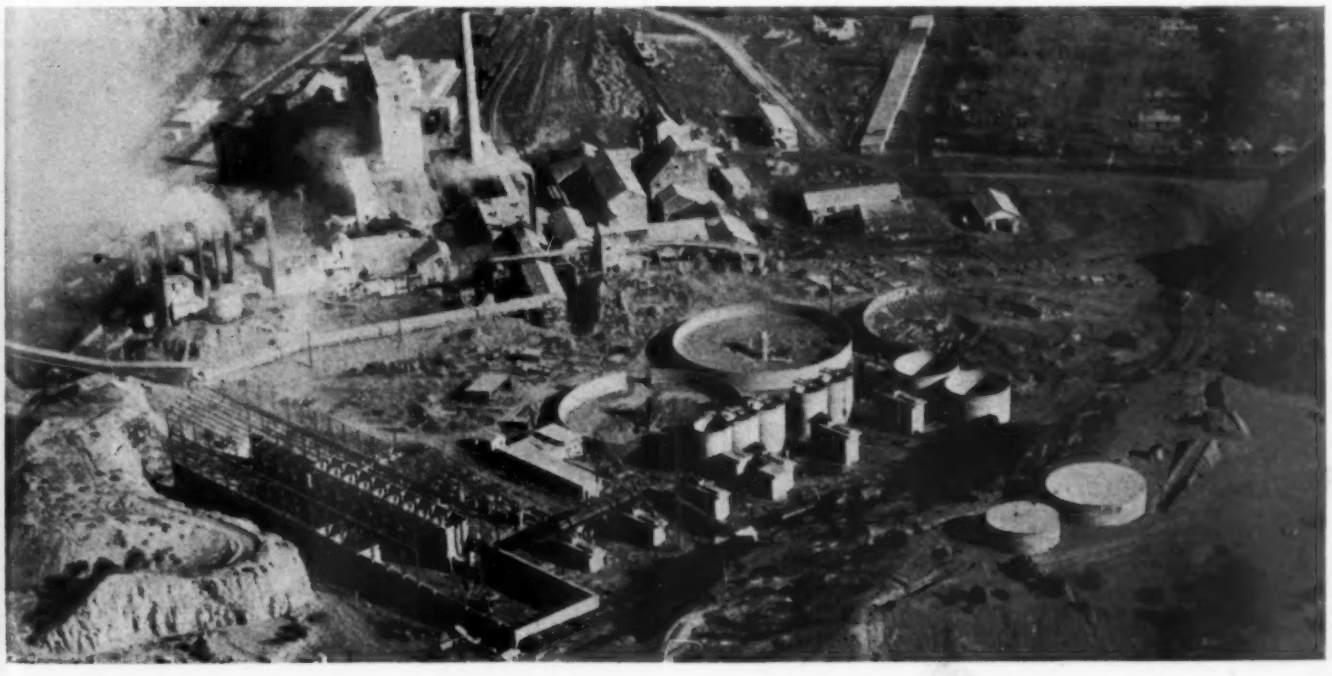
• An aerial view showing the progress of construction on the new plant of the Colorado (Ideal) Portland Cement Co. at Portland, Colo. The old plant is in the background.

Fighting Cement Ship Retires After 5-Year Service Term

The *Samuel Mitchell*, first self-unloading bulk cement carrier in the world, which was loaned to the United States government to serve as a cargo ship during World War II, will be stripped of her guns and refitted as a cement transport at Chicago.

The *Mitchell* was turned over to the government in 1942 by her owner, the Huron Portland Cement Company. Her wartime travels took her into nearly every part of the world. She will rejoin the steamers *S. T. Crapo* and *F. W. Boardman* as a unit of the Huron fleet. The craft is expected to haul her first postwar load of cement from the Huron plant in Alpena, Michigan, late this year.

More than 2,000,000 tons of sulphur are produced in the United States each year. More sulphur is used in America than copper, rubber, tobacco or nickel.



Most Nonmetals Set New Production Records in 1947—1948 Prospects Good

THE nonmetallic minerals, other than cement and aggregates, followed up the record-breaking year of 1946 by shattering those records by even larger margins in 1947. No complete official figures for 1947 are yet available but partial figures for many of these products and unofficial reports on others leave no room for doubt on this score.

The continued effort to increase farm production for the starving peoples of Europe was again responsible for new records in the production of phosphate, potash, etc. The ever-expanding demands of the building industry created record demands for gypsum and gypsum products, rock wool, pumice, perlite, roofing granules, and others. The growing activity of the chemical and manufacturing industries created record demands for sulphur, talc, barites, bentonite, ground mica, etc.

The lime industry was apparently the only important industry to show a drop in production in 1947—figures through October indicate a drop of about 3 percent for the year.

The year was also an important one for other reasons. Some of the new postwar plants completed or under construction are far ahead of general practice in their industries. This was true particularly in the lime, gypsum, feldspar, rock wool, roofing granules and phosphate industries.

Important technological developments which were publicized during the year were lime calcination by fluidization, the growing use of flotation in feldspar processing, etc.

Lime and Roasted Dolomite

The apparent volume of lime shipments in 1947, (exclusive of captive tonnage and roasted dolomite) based on the figures for members of the National Lime Assn., was about 4,730,000 tons, about 3 percent under the total of 4,921,000 tons sold in 1946. Starting out the year on a higher level than in 1946, sales held up well until June when they dropped sharply to slightly under June, 1946 and remained there through October, the last month of record. Assuming that the usual seasonal drop took place in November and December, the figure for the year showed a net loss. No estimates can yet be made for the different types and uses of lime and how they were affected.

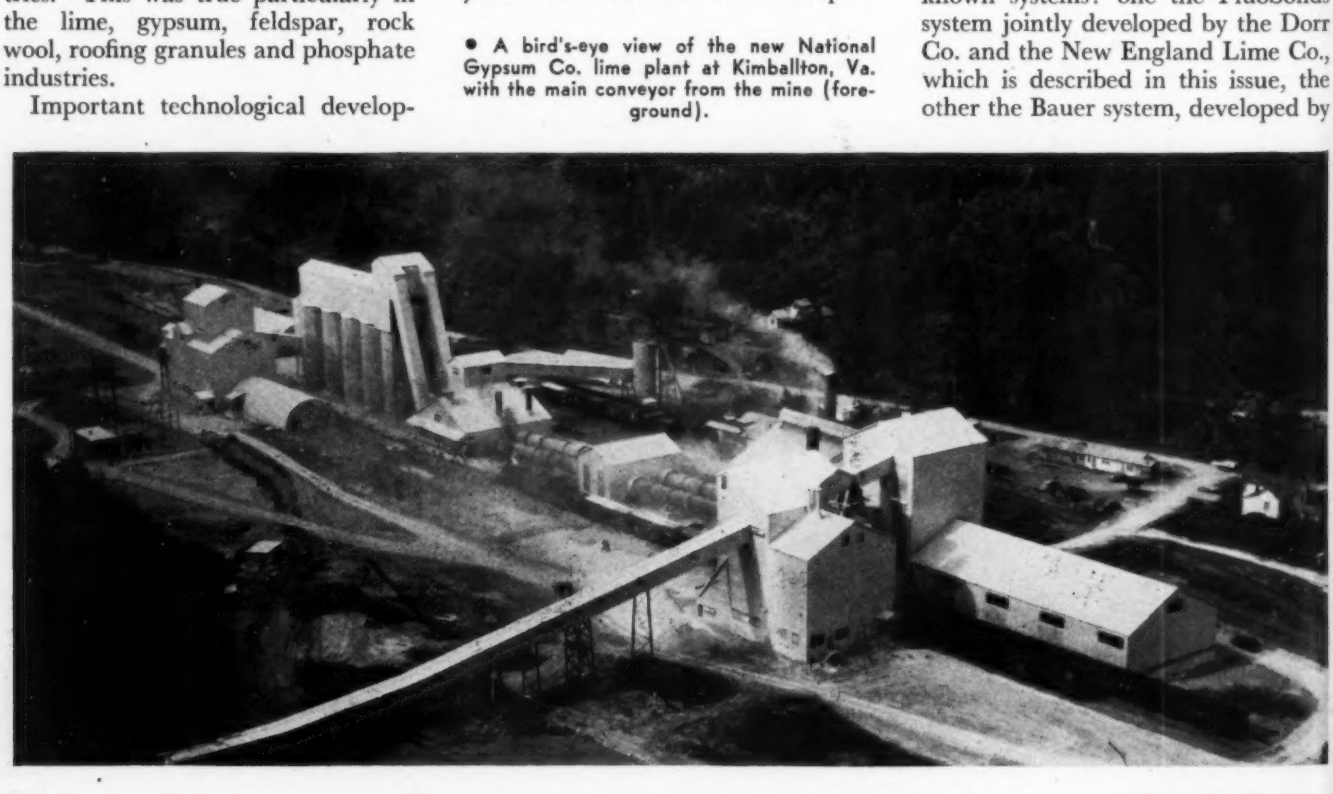
In addition 1,077,983 tons of refractory (dead-burned) dolomite were produced in 1946. No figures for 1947 are yet available.

The final reports for 1946 show a continuation of the trend toward fewer and larger lime plants which has been going on for at least 20 years. In 1925 there were 450 producing plants; in 1946 there were only 182 but these had a combined productive capacity at least one-third greater. The decline has been greatest in the smaller plants, especially those producing less than 1,000 tons annually. These apparently cannot produce economically and efficiently enough for present conditions.

The year was marked by the completion of the first large new postwar lime plant, that of the National Gypsum Co., Kimballton, Va., which was completely described in the December issue of PIT AND QUARRY. This plant is expected to have a calcining capacity of 600 tons in 24 hours when in full production and has a hydrating capacity of 12 t.p.h.

Also near completion at the end of the year were the new plants of the Kelley Island Lime & Transport Co. at White Rock, Ohio, a large vertical kiln operation; the Cutler-Magner Co., Superior, Wisc., a rotary kiln plant, the Limestone Products Co., Inc., Cleburne, Texas, a 100-ton per day plant using ten Cliffe vertical kilns.

In 1947 a process used for many years in other industries was first applied successfully to lime calcination; this is fluidization or burning in suspension. At present there are two known systems: one the FluoSolids system jointly developed by the Dorr Co. and the New England Lime Co., which is described in this issue, the other the Bauer system, developed by



• A bird's-eye view of the new National Gypsum Co. lime plant at Kimballton, Va. with the main conveyor from the mine (foreground).

Wolf G. Bauer, consulting engineer and contributing editor to PIT AND QUARRY, which was described in the May, June and August issues.

Another outstanding post-war development is the rapid acceptance being gained by the Ellernan calciner since the end of the war. Installations of these kilns have recently been completed or are under way at Dolomite, Utah; Portland, Ore.; Manitowoc, Wis.; Chicago, and Colorado Springs.

It is known that there has been considerable expansion in the refractory dolomite industry during 1947 and that other expansions are either under way or planned for 1948. Basic Refractories, Inc. a few months ago completed the installation of the seventh rotary kiln at its Maple Grove, Ohio, plant. This is a 11½- by 328-ft. kiln, said to be the largest-diameter kiln in existence. Further expansion is planned.

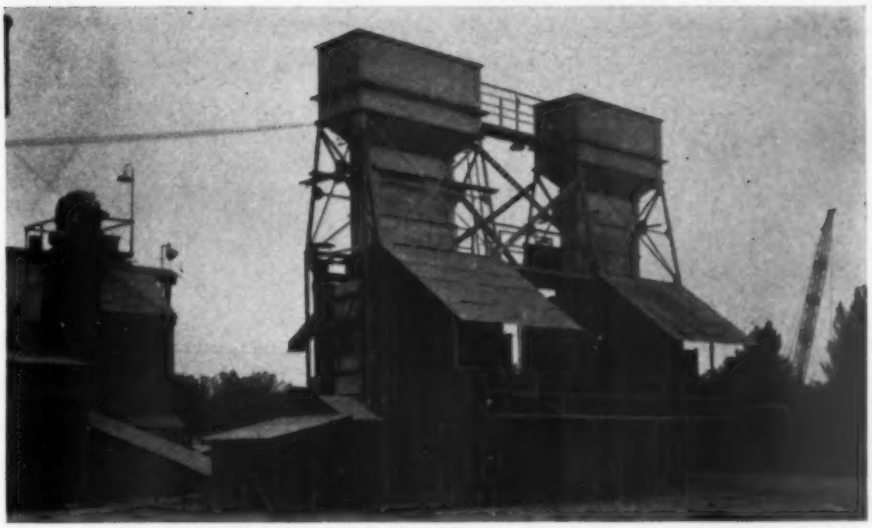
The Mississippi Lime Co., St. Genevieve, Mo., is reported to have installed another rotary kiln in 1947.

The expansion program of the Dolite Co., Gibsonburg, O., will include a new Nordberg kiln and other equipment. The entire program will cost over $1,000,000 over a period of years.

The Kelley Island Lime & Transport Co. has nearly completed the $800,000 new crushing plant at Gibsonburg, Ohio.

Gypsum The production of gypsum and gypsum products in 1947 apparently continued the sharp advance made in 1946 from the low volume of 1943 through 1945 when less than 4,000,000 tons of gypsum were mined in this country and less than 500,000 tons were imported annually. In 1946 5,629,398 tons were mined and 1,457,140 tons were imported. For 1947 only figures for the first 9 months are now available but these show that in that period the total of gypsum mined was 4,530,977 tons, an increase of 14 percent over the same period in 1946 and probably a new all-time record; and the total imported was 1,513,388 tons, an increase of 65 percent over the same period.

In 1946 the production of calcined gypsum was 4,169,662 tons. In the first 9 months of 1947 the production was 3,608,791 tons, an increase of 22 percent over the same 1946 period. In the same period uncalcined gypsum sold or used as a cement retarder was up 22 percent, agricultural gypsum was up 11 percent; industrial uses were up from 3 to 5 percent. Building uses showed large increases over the first 9 months of 1946, ranging from 3 to 61 percent in various categories. Plaster base coat was up 21 percent, wallboard was up 11 percent, and lath output increased 48 percent.



• The lime calcining installation of the Pacific Carbide & Alloys Company at Portland, Ore.

The capacity of the industry in its various categories was increased somewhat during 1947 but most of the improvements completed or under way will not be fully felt until some time in 1948. There was little apparent change in mine capacity. The Kaiser-owned Standard Gypsum Co. plant at Long Beach, Calif., went into operation during the year. This has a daily capacity of 150 tons of plaster and 300,000 sq. ft. of board. Apparently the new board plant of the Gulf States Gypsum Co. at Houston, Texas, contributed little to the board total although some plaster is reported to have been produced.

The National Gypsum Co. partially completed its vast expansion program in 1947, including a $1,000,000 expansion at Rotan, Texas, and a $750,000 expansion at Savannah, Ga. The capacity of its mines and plants at Medicine Lodge, Kans. is being doubled; $1,000,000 is being spent on its calcining and board plants at Clarence Center, N. Y.; $600,000 on its lath plant at Niles, Ohio, and $250,000 at Fort Dodge, Iowa. Now near completion is the new $6,000,000 plant at Baltimore, Md., which will have a capacity of 90 tons of plaster per hour and 120 feet of board per minute. It will calcine gypsum from the company's Canadian mines.

Several developments of the United States Gypsum Co. are too late to materially affect the industry's capacity in 1948. Included are new plants at Plaster City, Calif.; Ashway, N. J.; Los Angeles; Sigurd, Utah; and Berkely, Va. These operations are part of a $42,000,000 expansion program announced by U. S. G. early in 1947 which includes other new plants to be announced later.

Also at Sigurd the Western Gypsum Co. is building a new plant at a cost of over $1,000,000.

Sulphur According to the U. S. Bureau of Mines the production of sulphur in October 1947 for the fourth consecutive month surpassed that of the previous month and established a new record. Output through October was 16 percent above that for the same period of 1946, in which year an all-time record of 3,859,642 long tons was set. Producers stocks at the end of October were 3,457,899 tons, as compared to 3,983,973 a year ago.

An important development of the year was the announcement by the Freeport Sulphur Co. that it will spend $4,900,000 on the expansion of its plant at Grand Ecaille, La. The Texas Gulf Sulphur Co. has a new $2,000,000 plant under construction near Liberty, Texas.

Rock Wool The rock wool industry again in 1947 apparently failed to keep up with the growing demand created by the building boom and the growing demand for insulation, in spite of plant expansions. No figures are yet available but it is certain that this mushrooming industry again set a new record of production.

Many new plants were built, many more are under way or planned, new uses for this product were developed, and improved methods of manufacture were devised. It is likely, however, that the most important recent development is the growing trend toward the use of waste lead and copper slag as a raw material in place of natural

rock. This material is now being used almost exclusively in the large producing area near Wabash, Ind.

Bauxite The production of bauxite in the United States, which reached its all-time peak during the war when imports were in danger of being cut off, has since fluctuated widely at lower levels. In 1945 a total of 974,506 tons (dried equivalent) was produced, considerably below the 1944 volume. In the last half of 1946 production increased sharply to a total of 1,117,227 tons for the year. A drop in output began in the second quarter of 1947 and continued in the third quarter but the 9-month total was still far ahead of that for the same period of 1946 —917,346 tons compared to 799,602.

As production dropped, however, imports increased with the result that the total new supply for 1947 to date is nearly 60 percent over that a year ago.

Abrasive Materials The output of natural abrasives in 1946 rose to 1,205,497 tons, an increase of 23 percent over 1945. The ground sand and sandstone, diatomite, pumice and pumicite industries each set new records. The output of garnet was the highest since 1925, and tripoli and quartz were over 1945. Totals for 1946 were: ground sand and sandstone, 575,888 tons; pumice and pumicite, 319,883 tons; quartz, 73,179 tons; tripoli 28,955 tons.

The production of pumice and pumicite had increased fairly steadily for many years due to its industrial and building uses. The mushroom-like growth of the concrete block industry and the demand for light-weight aggregates indicates that a new record was undoubtedly set in 1947 and that 1948 will probably be even higher. New producers have sprung up throughout the West.

There are limits, however, to the economical shipping range of this naturally-expanded aggregate. This is not the case with perlite, a similar product which can be shipped in its natural state and expanded at centers of demand, resulting in considerable freight savings. As a result many new producers have sprung up during the past year and more can be expected in 1948. The rate of growth of this industry is terrific and apparently the market is ready to absorb the still limited production.

Roofing Granules The official figures for 1946 show that the roofing granules industry set a new record of 1,380,560 tons produced, 32 percent over 1945. The increasing tempo of building construction was the reason. For the same reason it is predicted that 1947 volume was even higher and 1948 is again expected to set a record.

That the industry was not caught napping by this sharp increase in demand is evidenced by the new capacity made available during the year. One producer, the Minnesota Mining & Mfg. Co., followed up the expansion of its Wausau, Wisc., plant with a $3,000,000 new plant at Little Rock, Ark., which has a capacity of 250,000 tons annually. Another large plant being built in California will add further capacity during 1948. Other producers have also been active.

Potash The potash industry set new records in 1946 in both production and value of sales —1,687,735 tons and $32,000,000— production exceeding 1945 about 6 percent. Another new record was undoubtedly made in 1947, although no official figures are yet available and 1948 should repeat—both because of the increasing efforts to increase agricultural production which is the largest user. The announced $7,000,000 improvement of the Trona, Calif., plant of American Potash & Chemical Corp. will materially increase the capacity of the industry by the end of the year.

Talc, Pyrophyllite and Soapstone The talc, pyrophyllite and ground soapstone industries in 1946 set a new high record in mine production, 460,554 tons, and new highs in sales, both in quantity (457,066 tons) and value ($6,445,344).

No official figures for 1947 are yet available but new records are believed to have been set.

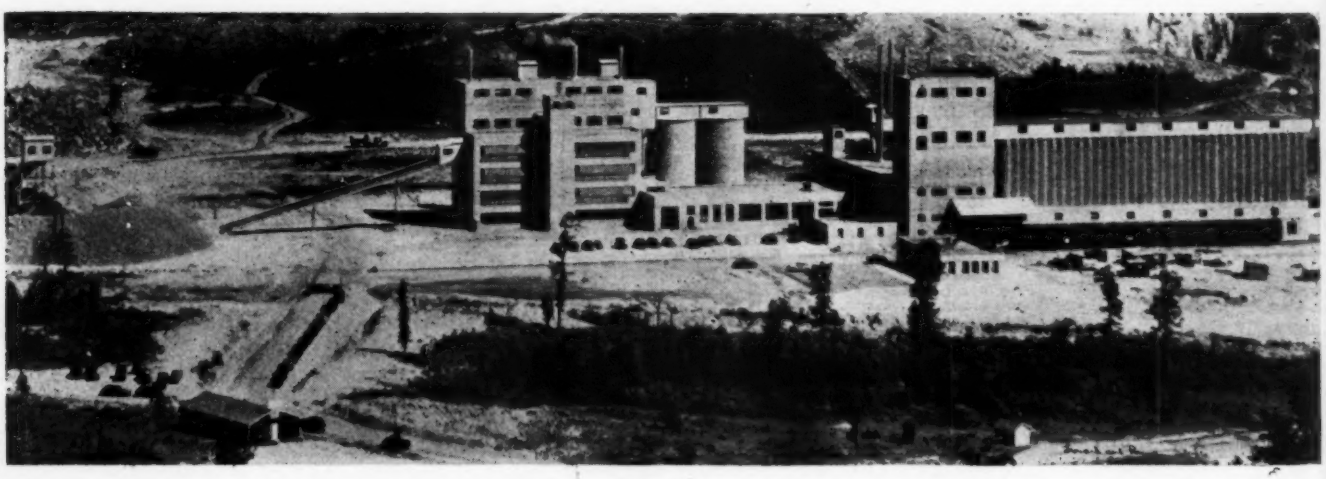
The prospects for 1948 are for even higher records and the industry is well prepared to meet any demands.

Phosphate The phosphate industry in 1946 set a new record both for volume of production and value. The new record was 7,168,839 long tons. The total sold or used by producers also set a new peak, 6,860,713 tons valued at $31,043,821; over a million tons and over 7 million dollars over 1945. The P_2O_5 content also set a new record of 2,216,978 long tons.

No official figures for 1947 are yet available but unofficial sources indicate a considerable increase.

The prospects for 1948 are excellent and another record year is expected. The industry's productive capacity increased somewhat in 1947 and will gain even more when the new Noralyn, Fla. plant of International Minerals & Chemical Corp. reaches its capacity, about 1,000,000 tons annually.

Mica The production of sheet mica in 1946 increased 17 percent from the 1945 total, to a volume of 1,078,867 lb. Scrap mica, however rose 30 percent to 53,602 tons. The output of ground mica reached an all-time high of 62,113 tons, 20 percent over 1945 and 18 percent above the previous 1944 record.



• General view of the new roofing granules plant of Minnesota Mining & Manufacturing Co. at Little Rock, Ark.

Production of Sand-Gravel, Crushed Stone, Slag Reaches Near-Record Mark

Aggregates Near Peak; Industrial Demand High; Agstone Shows Loss in 1947

THE aggregates-producing industry—sand and gravel, crushed stone and slag—in 1947 had what appears to be one of its biggest years, second only to 1942 in volume, and second to none in value of shipments. Production is estimated to have been up about the same as cement shipments, about 12 percent over 1946, in spite of a lower volume of actual construction. Producers were pretty generally able to keep up with the demands but, due largely to general freight car shortages and to localized and temporary labor and equipment shortages, there were times when all demands could not be met.

The actual capacity of these industries was considerably increased during the year and, with the considerable capacity now under construction or planned, should be adequate to meet the expected further increase in demand in 1948.

SAND AND GRAVEL

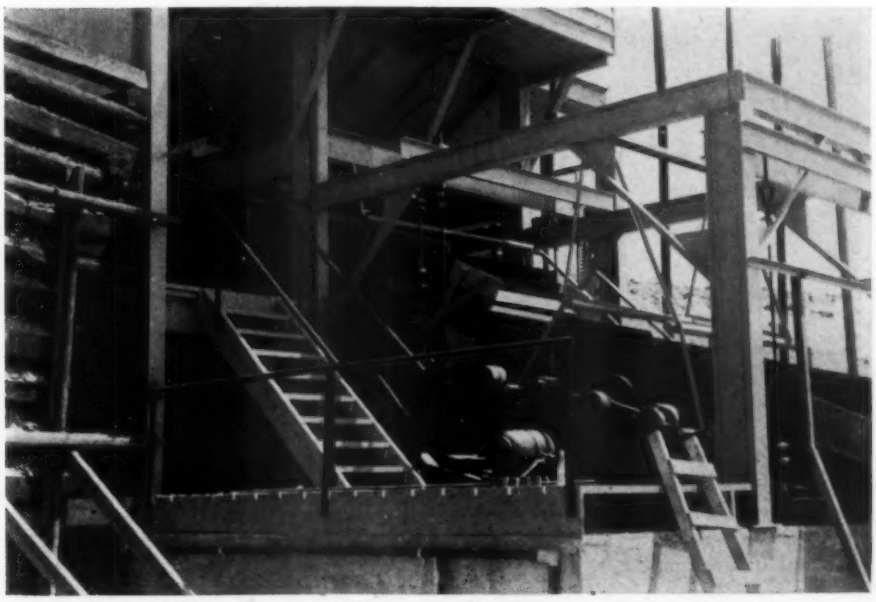
The commercial sand and gravel industry, which in 1946 jumped its output to 192,092,566 tons, a 26 percent increase over 1945, made further gains in 1947, perhaps as much as 14 percent, from incomplete information now available. This would mean a total commercial output of about 217,000,000 tons, a figure exceeded only in the war boom construction year of 1942. The known increase of about 12 percent in cement shipments in 1947 is an accepted check on the above as the cement and gravel curves through the years run almost parallel.

• A general view of the new plant of the Dixie Sand & Gravel Co., Petersburg, Va. with the old plant in the background.

No information is available on 1947 non-commercial production. In 1946 Government agencies produced 37,614,000 tons and contractors 24,425,000 tons, making the 1946 grand total for all types of production 254,131,000 tons, 30 percent over 1945, a figure exceeded only in 1941 and 1942. Together these non-commercial figures formed 24 percent of the total as compared to 22 percent in 1945. There was probably no percentage loss in 1947. The total sand and gravel production in 1947 is estimated, therefore, at about 290,000,000 tons.

These figures check quite well with the results of a questionnaire presented elsewhere in this issue which was sent to hundreds of producers in all parts of the country and gives a fair cross-section of conditions. This showed an increase in output through 1947 and an expected increase in production in 1948 of about 11 percent.

According to the questionnaire results a large percentage of the producers expanded their capacity during 1947, resulting in perhaps a 5 percent increase in capacity for the entire industry. Many expect to expand in 1948 for a total increase of about 6 percent for the industry. These figures for 1948 are conservative because they necessarily do not include new operators whose plants will go into operation in 1948.



• A closeup at the Dixie plant showing the primary screen under the plant feed hopper and the scrubber screen (right).

Expansion In the sand and gravel industry the increased capacity in 1947 was achieved in the normal manner for a year of expanding demand. Many new plants were built, in all size brackets, and expansions of existing plants were similarly distributed. From information now available further expansion in 1948 will be along the same lines. Outstanding will be the $1,000,000 Eliot, Calif., plant of Pacific Coast Aggregates, Inc., scheduled for completion early in 1948.

Some of the new plants involved new ideas in general design and

• General view of American Aggregates' modern sand and gravel plant at Kalamazoo, Mich. The plant rests on three concrete storage silos.

construction and new types of machinery. Many of them were described in these pages during the year. One of the larger new plants just completed is described in this issue, that of the New York Trap Rock Corp. at Port Washington, L. I. This is a 500-cu. yd. per hour operation involving many new ideas.

An excellent example of a medium-sized post-war plant is that of the Dixie Sand & Gravel Co., at Petersburg, Va., a 250-t.p.h. operation which involves new methods of design, construction, operation and equipment. All phases of this operation were completely described in the December issue.

Other outstanding plants were those of the American Aggregates Corp., at Kalamazoo, Mich. (see PIT AND QUARRY, October, 1947), and the Granite Materials Co., North Hollywood, Calif. (see PIT AND QUARRY, August, 1947), and Pacific Coast Aggregates, Inc., Kerlinger, Calif.

CRUSHED STONE

Production The total production of crushed stone (not including that used in cement and lime manufacture), in 1946 totaled 177,477,780 tons, an increase of 16 percent over 1945. The total commercial production was 169,636,600 tons. No figures for 1947 are yet available but it seems certain that there was little if any increase, and that volume did not approach the record year of 1942. Cement shipments are always a good guide to aggregates production and the 12 percent increase there indicates a similar increase for crushed stone used for concrete and road metal, a category which usually forms about half of total production. Most of the other categories such as flux, railroad ballast, etc., probably also showed some gain due to the higher industrial tempo. Only agstone probably showed a serious drop from its 1946 volume, which was a respectable 22,781,750 tons, due to a sharp drop in deliveries at mid-year and the resumption on a smaller scale.

Elsewhere in this issue is an article analyzing the results of a questionnaire sent to hundreds of producers throughout the country. This shows that business improved in 1947 for most producers and that the industry operated at 91 percent of capacity. A further increase of about 12 percent is expected in 1948.

Improvements made to existing plants increased the potential capacity of the industry by about 8 percent in 1947. A further increase of about 7 percent is expected in 1948. This does not include new operators whose plants may go into operation during the year.

• The new crushed stone plant of Fred K. Betts III, at Harrisonburg, Va. Crusher building at left and screen and truck-loading bin at right.

Expansion Although, as has been shown, the crushed stone industry increased its capacity considerably during the year, few outstanding new plants were built. The increase came largely from small and medium-sized new plants and the expansion of existing plants. The agstone industry, however, completed a number of outstanding new plants early in the year.

An interesting small new crushed stone plant built by Fred K. Betts III at Harrisonburg, Va., was described in the September, 1947 issue of PIT AND QUARRY. With a minimum of equipment this plant can produce from 90 t.p.h. of minus-1-in. stone to 150 t.p.h. of minus-4-in.

• A general view of the Carolinas Cement & Lime Company's recently-completed agricultural limestone plant at Harleyville, S. C. The raw storage shed is on the left, the 1,200-ton finished product storage tank on the extreme right.

An improvement typical of a strong trend in recent years was made by the Cedar Bluff Stone Co., Princeton, Ky., and described in the August issue of PIT AND QUARRY. A 2-stage belt conveyor now connects the primary crusher in the quarry with the plant.

One of the best and most interesting new agstone plants of the year was that of the Carolinas Cement & Lime Co., Harleyville, S. C., described in the June issue. This plant processes marl, using a rotary drier ahead of the crusher and screens.

BLAST FURNACE SLAG

The production of iron blast furnace slag in 1946 reached a new high of 16,706,792 short tons, according to the National Slag Assn. This was 32 percent above the 1945 volume. The increase affected all types of slag: screened air-cooled slag, the major product, was up 25 percent; light-weight aggregate reached a total of 773,150 tons, an increase of 230 percent, due to the growing demands of the concrete block industry.

No figures are yet available on 1947 production but it was undoubtedly again considerably above the preceding year. The increase was probably somewhat below the 12 percent increase in cement shipments and the 14 percent increase in sand and gravel production. The potential productive capacity of the industry is a factor as the sources of good slag are limited. It is possible that this limit has been approached in 1947 or that it may be in 1948. Other than this a further increase in demand can be expected.

Agstone Division Capitalizes On Farm Show at Chicago

The Agricultural Limestone Division of the National Crushed Stone Assn., as a part of its program of publicizing and promoting the use of agricultural limestone, had an exhibit at the National Farm Show which was held at the Coliseum, Chicago, November 29 through December 7, 1947, concurrently with the International Livestock Show and other farm meetings. This exhibit attracted considerable attention, and producers cooperated with the Division in answering the questions of interested farmers. Contributions from members paid the expenses of the exhibit. Following are the names of the men who helped in the booth, together with the names of the companies with which they are associated:

Lynn Stewart, Columbus, Ind.; K. K. Kinsey, Concrete Materials and Construction Co., Cedar Rapids, Ia.; Wm. E. Hewitt, East St. Louis Stone Co., East St. Louis, Ill.; Norbert F. Schwarz, Pontiac Stone Co., Pontiac, Ill.; F. W. Mumma, Columbia Quarry Co., Decatur, Ill.; Paul N. Doll, Missouri Limestone Producers Assn., Jefferson City, Mo., C. A. Bernard, American Limestone Co., St. Louis, Mo.; D. S. Pickett, Lehigh Stone Co., Kankakee, Ill.; R. G. Goodrich, Franklin Limestone Co., Inc., Nashville, Tenn.; Worth W. Merritt, National Stone Co., Joliet, Ill.; Paul Frank, North Vernon, Ind.; and Wm. E. Kearn, Consumers Co., Chicago, Ill.

• Left to right: William E. Kearn, Consumers Co., Chicago; Nina Hershner, Pennsylvania's Miss Agriculture; Henry G. Huschke, managing director, Agricultural Limestone Division, National Crushed Stone Assn.

Limestone Circular Issued By the U. S. Mines Bureau

A U. S. Bureau of Mines circular surveying the production, consumption, and uses of limestone—one of the nation's basic building materials—has been released by Bureau Director James Boyd.

Millions of tons of limestone are used annually for road-building, concrete aggregate, fluxing stone, and agricultural stone, according to the publication. Dimensional stone—the second of the two main classes of limestone utilization—includes stone that has been cut to definite shapes and sizes for building purposes.

Varieties of limestone produced in the United States, the types of products made from the stone, the centers of production, and economic conditions are discussed in the circular. Other sections deal with quarrying and milling methods, and marketing of limestone.

Although limestone is found in every state in the Union, unfavorable economic factors such as heavy transportation costs, lack of available markets and unsatisfactory quarry conditions prohibit the development of a large percentage of the reserves, the report shows.

A copy of Information Circular 7416, *Limestone As A Building Material* by Oliver Bowles, former chief of the bureau's Nonmetal Economics Division, and Nan C. Jensen, of the same division, may be obtained free by writing to the Bureau of Mines, Publications Section, 4800 Forbes St., Pittsburgh 13, Pa.

Consolidated Rock Products Modernizing Irwindale Plant

At the Irwindale, California, plant of the Consolidated Rock Products Co., the excavation has been completed for the 2300-ft. conveyor into the pit northwest of Azusa Canyon Road. Galvanized corrugated iron culverts to be used for tunnels are in position and the 4000-volt electric line which will serve the pit has been completed.

According to an announcement received recently from the United Cement, Lime and Gypsum Workers International Union, the organization will maintain general offices in its own building at 3329 West Washington Boulevard, Chicago, effective November 1.

Industry Survey Forecasts Increased Use of Concrete Materials in 1948

Cement, Sand & Gravel, Crushed Stone Production Will Hit Near-Record Levels. Industries Expand to Cover Increased Sales.

By WILLIAM M. AVERY

WITH a view to developing an accurate and up-to-the-minute picture of conditions in the primary construction materials industries, in the closing weeks of 1947 PIT AND QUARRY sent out a survey questionnaire to several hundred carefully selected producers of cement, sand and gravel, and crushed stone in all sections of the United States. Although the sample was admittedly small, almost 40 percent of the producers queried replied in full, and the returns were well distributed among the three industries, and with respect to geographical location and size of plant. In consequence, the tabulated findings undoubtedly present as true an indication of current thinking and future prospects as has ever been compiled for these industries.

The two-part questionnaire requested information concerning production trends, plant expansion programs, selling prices of materials, cost increases, wages and labor supply for both 1947 and 1948. Although individual opinions undoubtedly had a strong influence on all questions pertaining to 1948, it was thought that the producer's intimate knowledge of local conditions affecting his particular plant would elevate his predictions considerably above the level of mere opinion. Elsewhere in this issue will be found complete estimates on 1947 production in all the nonmetallic minerals industries covered by the survey, but insofar as the trends for that year seem significant in appraising the industries' own forecasts for 1948, the returns will be summarized in this discussion.

CEMENT

Returns on PIT AND QUARRY's survey questionnaire represented over 20 percent of the portland cement producing capacity in the United States, and the composite picture should accordingly be accurate within quite narrow limits.

Production All but a very few companies reported operations in the first half of 1947 at considerably higher levels than in the corresponding period of 1946, with estimates of the increase ranging from 2 percent to 27 percent. In the last half of the year all plants reported full capacity operations. For the entire year almost half the companies reported operations at 100 percent of nominal capacity, and the average level for all companies was 88.9 percent. The lowest level of operations reported for 1947 was 72 percent of capacity. Estimates from other sources indicated that shipments of cement during the year amounted to 188,000,000 barrels, an increase of more than 12 percent over 1946, and a new record for the industry.

More than half the companies (53 percent) expect the upward trend in production to continue throughout 1948, and their estimates of the probable increase averaged 7½ percent. However, since the remaining 47 percent expected no increase in 1948, the adjusted average increase for the entire industry would be only 4 percent. This indicated that cement production in the current year would approximate 193,000,000 barrels. Lots of things, of course, could happen in 1948 to upset this optimistic forecast of production, but the conservative tendencies of the cement industry as a whole suggest that the estimate is at least based on strong probabilities.

Capacity Expansion The tabulated questionnaire returns indicate that 4 out of 10 plants in the portland cement industry completed expansion program during 1947. The increased capacities reported ranged from 5 to 40 percent, with 21 percent representing an approximate average. Spread over the entire industry the adjusted increase amounted to about 8½ percent, or approximately 17,500,000 barrels. Obviously, a large part of this increased capacity was available during only a small portion of the year, but it unquestionably accounted for a share of the increased output in 1947.

Exactly half the companies reported plans for increasing capacity during 1948, their estimates ranging from 5 to 35 percent. Probably it was just a coincidence, but it figured out that the entire industry would increase capacity in 1948 by almost exactly the same margin as in 1947—8½ percent, or approximately 19,000,000 barrels. We fully expect some of our readers to write in asking what brand of opium we were smoking when we arrived at that figure. Although on the face of it it would appear that the sampling method may have gone haywire, actually the data seemed to hang together surprisingly well, and the conclusion to be in general accord with other information available. If an increase of 35,000,000 million barrels in cement making capacity in two consecutive years seems a bit hard to swallow, our skeptical readers should be reminded that in both 1946 and '47 there were rather acute shortages of cement in many sections of the country. Viewed in this light, the questionnaire returns may merely indicate that the cement industry hopes to take care of *all* its customers in 1948. It is quite probable, too, that some capacity was lost during 1947 due to retirement of over-age kilns.

	1947	1948
CEMENT	Up 9%	Up 4%
SAND & GRAVEL	Up 10%	Up 6.6%
CRUSHED STONE	Up 2%	Up 11%

PRODUCTION TREND

Cement Prices Without exceptions the companies answering questionnaires reported that they had increased their prices during 1947. Anyone tempted to yell "collusion", however, had first to explain away the considerable gap between the maximum and minimum increases reported. Various companies re-

ported increases ranging from 4 percent up to 15 percent, and the computed average increase amounted to only a little over 10½ percent. This, of course, applied only to mill prices, and it marked the first important price advance in a number of years. In some areas delivered prices had increased as much as 35 percent due to increased freight rates. According to a Bureau of Mines report for the first quarter of 1947, the mill value of portland cement had increased to $1.85 per barrel compared with $1.72 in 1946, or about 7½ percent. The survey indication of 10½ percent for the entire year seems in harmony with this figure.

Over 90 percent of the reporting companies thought that they would be compelled to increase prices again during 1948. About 3 percent expressed an emphatic "No" and the remainder neglected, for understandable reasons, to answer the question at all. In this instance no effort was made to ascertain the probable margin of the increase.

Production Costs In our questionnaire we asked rather bluntly: "By what amount (percent) did your production costs increase during 1947?" About 5 percent of the replies were of the "Don't Know" variety, but at any rate nobody took issue with our assumption that costs *did* increase during the year. Various estimates ranged from 5 to 34 percent, and the average for all the companies reporting was a little over 15 percent. Stacked up against the average price increase of 10½ percent, the figures appeared to offer convincing evidence that the cement industry is making a determined effort to hold the line on prices. Only one company reported a price increase higher than the indicated cost increase.

Labor In answer to the question "What change did you note in over-all labor efficiency during 1947?" Two-thirds of the companies replied "No Change." The others split about even in reporting either "Slight improvement' or "Down somewhat". Almost identical answers were given in regard to the outlook for 1948. There was undoubtedly some relationship between this point of view and the fact that 64 percent of the companies reported definite plans for installing labor-saving machinery during 1948. Approximately 93 percent of the companies anticipate renewed demands for wage increases during the year. Only one firm regarded such demands as "Unlikely", and the remainder expressed no opinion.

SAND AND GRAVEL

Replies were received from approximately 10 percent of the nation's commercial sand and gravel capacity, with unusually good distribution geographically and with respect to size of plants.

Production The survey returns indicated that in 1947 the sand-and-gravel industry operated at about 87 percent of nominal capacity. Actually the 87 percent figure is probably a better index to the industry's morale than to its production, for it is almost impossible to fix the true nominal capacity for any given year. As good a yardstick as any is the record output of almost 233,000,000 tons in 1942, even though in that year many plants increased output by operating two shifts. On that basis, the industry's estimate of 87 percent operations would indicate production of a little more than 200,000,000 tons, or an increase of only 4.2 percent over 1946. The actual increase was in all probability much closer to 10 percent.

Sand-and-gravel producers were somewhat cautious in their forecasts of production in 1948. Less than half (43 percent) thought demand would increase, their estimates ranging from 10 to 25 percent. The remaining 57 percent thought demand would be about the same as in 1947, although there were a few pessimists who predicted a downward trend. The adjusted average increase predicted for 1948 was 6½ percent, which, as a working figure, had at least the virtue of modesty.

Capacity Expansion Of the companies reporting, 39 percent said that they had expanded capacity during 1947 by margins ranging from 5 to 25 percent. The average increase reported was a little over 16 percent, and the adjusted figure for all reporting companies was 6.4 percent. Reduced to more finite terms, this figure probably indicated that the industry increased its effective capacity during the year by close to 15,000,000 tons.

Over 20 percent of the companies reported plans for expanding capacity in 1948, but unfortunately the data submitted were insufficient for extension purposes. In a general way they suggested that the industry's capacity may be increased by about the same increment in 1948 as in 1947.

Prices and Costs About 6 companies out of ten reported price increases in 1947 ranging from 3 to 20 percent, with 12 percent representing a fair average. The adjusted increase (taking account of the 4 companies in 10 which did *not* increase prices) amounted to only a little over 7 percent on all products. Compared with the reported 13 percent jump in production costs, the price advance seems very nominal. In all cases the indicated price increase was less than the advance in cost. Approximately 60 percent of the companies anticipate having to make additional price increases in 1948, but none attempted to predict the amount.

Labor In a general way the survey returns suggest that labor supply is no longer a serious factor in the sand-and-gravel industry. More than half of the companies that supplied information find labor efficiency is still below prewar standards, and the vast majority expect no improvement during 1948. Evidently most of the industry is satisfied that mechanization is the best solution for the problem, since almost 70 percent of our informants say that they will install some labor-saving machinery in 1948.

Over 90 percent of the replies expressed a firm belief that hourly wages in the industry would show a further increase in 1948. A few guessed that the amount would approximate 10 cents per hour.

CRUSHED STONE

Replies from commercial crushed stone plants covered roughly 11 percent of the industry's capacity. Although the companies replying were well distributed geographically, there was a preponderance of relatively large plants. Some effort was made to analyze the returns from large plants in comparison with those from small producers in order to determine what effect this unbalance might have on the over-all picture,

CAPACITY TREND	1947	1948
CEMENT	Up 8.4%	Up 8.5%
SAND & GRAVEL	Up 6.4%	Up 10%
CRUSHED STONE	Up 10.8%	Up 10%

but no definite pattern could be determined. On the average, the small producers apparently were just as busy in 1947 as the large ones, and of the two groups they were noticeably more optimistic in their forecasts.

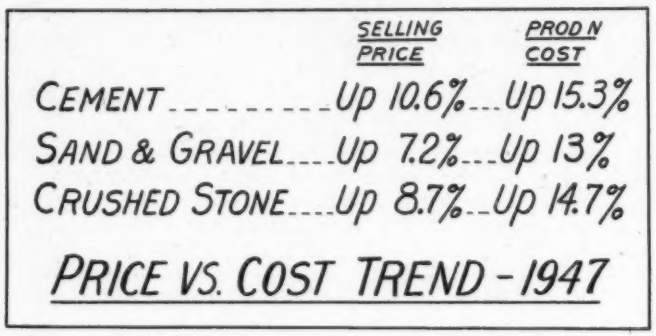
Production The returns showed that business during the first half of 1947 was rather slow; almost 30 percent of the companies reported that volume was "somewhat" below the level in the first half of 1946. This trend, if it was a trend, was completely reversed in the second half of the year. For the year as a whole the companies reported operations at 92.8 percent of capacity, with rates of individual operators varying from 75 to 120 percent of nominal capacity. Accepting the 1942 output of 194,537,000 tons as representing the capacity of the industry, it would appear that production in 1947 was very little more than 180,000,000 tons, representing approximately a 2 percent increase over 1946. Even at that, it made the year's output the third highest in the history of the industry.

Almost half (48 percent) of the reporting companies expect 1948 volume to show an increase over 1947, their estimates ranging from 10 to 30 percent. Making proper allowance for the companies which predicted no change, the average increase forecast was just over 11 percent. Thus if the clouded crystal ball was working at all, 1948 output would have to come very close to 200,000,000 tons, establishing a new record for the industry.

Capacity Expansion The tabulated figures indicate that the commercial crushed stone industry increased its capacity by almost 11 percent in 1947. Four out of 10 companies reported effecting increases during the year ranging from 5 to 50 percent. The practice of striking an average from data covering so wide a range is admittedly hazardous, since even a comparatively slight preponderance of figures at either extreme may destroy the validity of the sample. In this instance the preponderance was clearly among plants reporting relatively large increases in capacity, and in all likelihood the 11 percent figure was somewhat too high.

The same difficulty is apparent in the tabulated figures regarding expansion in 1948. In this case 30 percent of the companies reported having programs for expanding capacity by margins ranging from 10 to 100 percent. The adjusted average for all companies reporting was approximately 10 percent.

Prices and Costs Eight out of 10 companies replying to the questionnaire reported having made price increases in 1947 ranging from 5 to 23 percent. The average increase was 10.7 percent and the adjusted average was just under 9 percent. Cost increases in 1947 for all the reporting companies averaged 14.7 percent. Increases for individual companies ranged from a low of 6 percent to a high of 28 percent. A few concerns thought that their price increases in the past year would carry them through 1948, but the majority (79 percent) felt that further increases were inevitable. In all cases companies which had held their prices at 1946 levels indicated that increases would have to be made early in 1948.



Labor Labor supply apparently posed no serious problems in the crushed stone industry in 1947. A majority of the companies (58 percent) said that they saw no measurable improvement in efficiency, and the remainder divided about equally in reporting efficiency either "slightly up" or "slightly down". It would be impossible to judge from the returns just how serious the industry felt this problem to be, but some indication could be found in the fact that almost 7 out of 10 companies plan to install labor-saving machinery during 1948. Few operators, at any rate, seemed to feel that labor was making any concerted effort to increase output in order to justify the higher wages being paid.

A whopping 94 percent of the companies expect demands for increased wages in 1948. Although in some measure the prediction must have been based on specific knowledge of local conditions, the unanimity suggests that most producers simply take it for granted that the upward spiral will continue.

SUMMARY

As might have been expected, in most categories the survey indicated quite similar patterns for the industries covered, with operational levels for all three at close to 90 percent of capacity. For the three industries volume of output in 1947 very nearly equalled the figures for 1942, when war construction activity was at its peak, although, the actual amount of new construction (total private and public) was materially less in 1947. Even on a dollar basis (a poor yardstick in a period of inflation), total construction in 1947 was probably a billion dollars under 1942.

Only one conclusion can be reached: that more concrete is being used in construction work than at any time in history. Since fadism is never an important consideration in the realistic construction industry, the trend toward wider use of concrete is vastly important to the pit and quarry industries. Unquestionably the trend has been helped along to some extent by the scarcity of competitive materials, but clear preference for concrete on the basis of price, quality and performance was a far more important consideration in 1947. It will be increasingly important in the years ahead.

South Dakota Cement Plant's Output Surpasses 1946 Total

At the end of 1947 South Dakota's state cement plant at Pierre had shipped 750,000 barrels of cement — 300,000 barrels more than were shipped in 1946. Governor G. T. Mickelson, chairman of the state cement commission, stated that the demand for cement in South Dakota during 1947 was the highest on record. Within the state, said Governor Mickelson, users consumed 663,000 barrels.

On the books at the end of the year were orders for 65,000 barrels. Production capacity of the plant is 2,000 barrels per day. Expected production for 1948 is 825,000 barrels and for 1949, about 900,000 barrels.

Micronizer Company Buys Site For Future Grinding Plant

The Micronizer Company, a subsidiary of the Freeport Sulphur Company, has purchased 30 acres of land at Belle Chasse near New Orleans and is considering the construction of a plant there for grinding sulphur and other materials, according to an announcement made by Maurice F. Dufour, vice-president and general manager.

Formed early in 1947, The Micronizer Company is engaged in grinding materials to extremely fine particle sizes by a patented process known as "micronizing." It operates plants at Moorestown, New Jersey, and Charlotte, Michigan.

$1,200,000,000 Worth of Contracts Let for Road Construction in 1947

IN an effort to ascertain the progress of road construction in this country, the editors of PIT AND QUARRY wrote to each state highway department. From their answers there was a surprisingly high concurrence of opinion on problems and progress of road construction in 1947.

Despite serious material shortages, Detroit and other automotive centers rolled off near record numbers of new cars and trucks, swelling the total vehicle registrations in 1947 to an all time high of 36,164,405.* And still, two years after VJ Day, the demand for motor vehicles is unsatisfied.

The heavy increase in number of vehicles, the astonishing numbers of "well-heeled" Americans vacationing after four years of "A" card traveling, subnormal wartime road building and maintenance, an increased use of motor carriers for heavy freight hauls, all have accentuated the need for sweeping renovations of our country's road systems. This need has been recognized, and most state and federal highway authorities want to do something about it. Unfortunately, the whopping big $1.2 billion worth of contracts let for 46,250 miles of road construction in 1947 little more than dented the tremendous amount of road work to be done—although plans for supermodern highway arteries have been drawn up and approved and await only the green light.

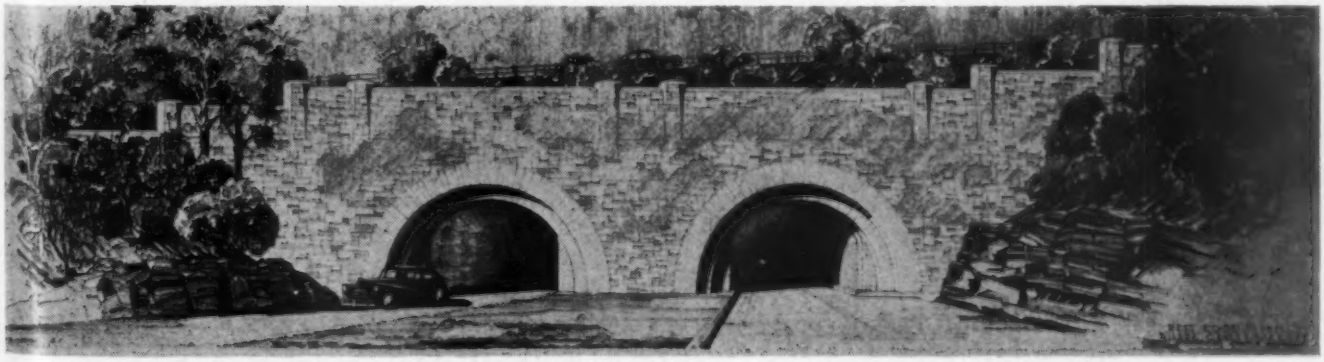
The states appropriated more money for highway construction in 1947, but, generally, received less for their construction dollar. Says Ray F. Smock, secretary of highways for Pennsylvania, "A two-lane concrete highway in the 1920's cost approximately $50,000 per mile. The same facility, with easier curves and grades, wider and deeper traffic lanes and satisfactory sight distance, costs from $125,000 to $150,000 per mile in Pennsylvania. About one-half of the increased cost is due to inflation, and the other half is due to providing a more satisfactory facility for modern traffic." As many state highway programs are set up on a mileage basis (with the completion of so many miles in each year of the program) the present lower return in miles per dollar spent could result in a long extension of present modernization programs.

• Completed abutments and piers for the new bridge over the Bluestone River in West Virginia.

Almost every state experienced shipping shortages. Lack of freight cars resulted in delayed or actual curtailment of aggregates, cement, and other construction materials. Recent pleas to state highway departments for voluntary cutbacks in the number of freight cars used to haul aggregates and cement attests to the seriousness of the car shortage. Although the highway departments indicated that they, too, felt the pinch from a tight steel situation, no state reported any instances of work stoppages due to the absence of this vital building material.

Where are those spectacular expressways that were to carry the post-war (?) cars? A few have been started but for the most part their plans have been laid aside for future considerations. One reason: Maintenance and reconditioning of existing facilities have taken a disproportionate share of the construction dollar. Then, too, the road needs far outstrip the ability to get the work done, for the contractors have been able, or willing, to absorb only so much work. In many states contracts go begging. Although state revenues have swollen, the ability of counties and municipalities to match funds with the federal government under provisions of the Federal Aid Highway Act of 1944 are more limited.

It is impossible to relay every problem encountered by the state engineers during the past year. For that reason and also to give our readers some idea of the scope and



• Proposed portal of West Rock twin tunnels, Wilbur Cross Parkway, as it will appear when finished. West Rock Park, New Haven, Conn.

*The Public Roads Administration estimated that this total climbed over the previous high of 34,472,145 made in 1941.

size of the individual programs, we are publishing, as part of this report, an abridged version of the material sent in by the state highway departments.

West Virginia "Our road construction efforts are, of course, far below our actual needs since we have many sections of obsolete primary roads and approximately 17,000 miles of unimproved mud roads in our secondary system. Furthermore, the greatly increased labor, materials and equipment costs have and will continue to very adversely affect road construction. The present road dollar is probably only 60 percent of its pre-war value. We have for sometime experienced great difficulty in obtaining both aggregates and cement, not only from the production standpoint but also from inadequate shipping facilities.

"Our last legislature made it possible for the people of West Virginia to vote on a $50,000,000 bond issue to be used for paving unimproved secondary roads. We feel confident that the bond issue will carry and in the event it does it will permit us to improve to an all-weather status all of the more important secondary roads. This is the most important step in highway improvement in West Virginia since the original primary bond issue in 1920.

"Probably the most outstanding construction project now under way in West Virginia is the relocation and reconstruction of a section of Route W. Va. 20, which includes a bridge over Bluestone River 1,158 ft. long and 162 ft. high. This relocation involves 5.97 miles and will entail an expenditure of approximately $2,395,000."

Arizona "For the fiscal year ending June 30, 1943, our budget calls for a total expenditure of $12,000,000 on the state primary system and $10,000,000 on the secondary system. Inasmuch as there are to be no federal funds available, the next year, we will have to curtail our construction program somewhat. We cannot say at this time how much of approximately $9,000,000 state revenues will be used and how much will be reserved for possible future federal aid. For the fiscal year 1945-46 we spent only $2,000,000 and in 1946-47 the amount of $9,650,000.

"No super-highways were built and no extra large bridges came into being to date. We do have two viaduct structures designed for construction this year, and foundations and piers are underway now for one of them."

Washington "The highway construction program in the State of Washington in 1947 will involve the awarding of contracts totaling approximately $14,500,000. The expenditures in 1949 will be dependent upon legislative appropriations and additional federal funds being provided by Congress.

"The increased construction costs reduce the amount of work that can be performed with available funds. However, the awarding of contracts has not been seriously affected as, in general, good competitive bidding has been secured. As long as this condition continues it is expected that the construction program will continue on the basis of available revenue.

"There has been no shortage of cement or other aggregates this season, although some delay has been occasioned due to car shortages for shipment of paving aggregates."

Virginia "Put under way during the fiscal year 1946-47 was $21,500,000 worth of construction on Virginia's 9,000-mile primary system of highways. This included 110 road projects, calling for 43 new bridges and 291 miles of new construction.

"During the current fiscal year (1947-48), allocations for work on the primary system total $17,500,000 and $20,000,000 has been allocated for the fiscal year 1948-49.

"In addition, the department annually spends around $20,000,000 for maintenance and construction on the 38,000-mile secondary system of county roads which is now under state administration.

"Virginia, like virtually every other state, is behind in her highway program. Her highways have not kept pace with the rapid development of the automotive industry. The war, too, set her back. But under a long range 20-Year Plan for highway improvement, the state's roads should be entirely adequate by 1965. Much work will naturally be carried out under this plan—which calls for more than a half billion dollars to be expended on the primary system for construction work."

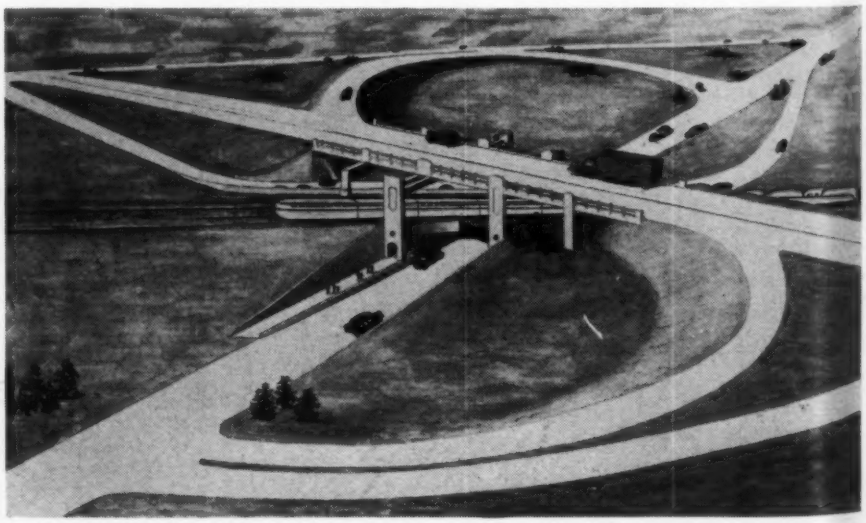
Vermont "During the two years since the end of the war, the Vermont Department of Highways has placed under contract or commenced with its own forces 165 miles of road construction and 23 bridges at a total estimated cost of approximately five and a half million dollars.

"Additional projects programmed for the future total in the neighborhood of an estimated four million dollars, with others being added as surveys and designs are made.

"Last winter the Vermont Legislature recognized the public need and appropriated additional money for highway construction to enable the state to take full advantage of the increased federal funds available. The federal funds so far allotted to Vermont amount to slightly over two million dollars for each of the fiscal years ending June 30, 1946, 1947 and 1948 and must be matched by the state on an equal basis. It is expected that the program will be spread over a five-year period.

"In order to accomplish this in the face of high construction costs, such features as extensive relocations and radical grade changes, involving the movement of large quantities of earth and rock, are being minimized. Drainage structures, sub-base construction and pavement continue to receive primary consideration, so that all improvements will be permanent additions to the highway system."

• Artist's conception of a new "triple-decker" to be built near Norfolk, Va. The cost is estimated at $1,000,000.



Connecticut "Sixty-four highway projects with a total estimated value of $17,295,550 will constitute the new work program of the State Highway Department for the 1948 construction season.

"Thirty-eight federal aid projects in various parts of the state account for $13,368,500 of the total value. Of these the largest will be the Housatonic River Bridge which will serve as part of the Derby-Shelton by-pass and which has an estimated value of $2,000,000. In point of cost the next important federal aid project is the relocation of Route U. S. 1 at Grannis Corner in New Haven."

Texas "The Texas Highway Department will continue with approximately the same work volume in 1948 as we have experienced in 1947 and 1946. We are now operating in the third year of the three year post-war program under the provisions of the Highway Act of 1944. The volume in dollars will be approximately sixty million in projects covering the entire state. A program for 1949 will depend on the action of the National Congress toward continuing the Federal Aid Highway Act.

"Material shortages have affected our construction program in 1947 and will most likely have its effect in 1948. The principal material shortage has been in steel. There have also been shortages in steel wire products as well as all building materials. We have experienced delays due to shortages and shipping facilities of aggregates. Asphalt became short in the height of the asphalt work season. Good construction weather this fall brought about a shortage in cement."

Pennsylvania "In 1946 Pennsylvania expended on improvement, construction, reconstruction, resurfacing and widening of roads, the sum of 35 million dollars. In 1947 Pennsylvania expects to spend 65 millions of dollars for similar purposes. In 1948 our expenditures on improvement accounts will total approximately 100 millions of dollars and in 1949 there will be about 84 million dollars available for expenditures on improvements. In 1950 unless additional federal or state funds are provided, there will be less than 40 millions available for such improvements.

"A careful survey of actual needs made by our field engineers disclosed that the sum of 837 millions of dollars should be expended in Pennsylvania for a five-year period, beginning in 1947, to supply state highway deficiencies. This amounts to more than 166 millions of dollars per year. At an average expenditure of 83 millions per year for 1947, 1948 and 1949, we are providing for approximately one-half of the highway facilities actually needed in Pennsylvania."

Ohio "Ohio has sold and advertised for sale projects amounting to approximately $36,000,000 in 1947, including engineering, inspection and contingencies. This work consists of new construction, salvage and reconstruction, and bridge construction.

"We are predicting a program of construction for 1948 and 1949 of approximately thirty to thirty-five million dollars per year. This, however, depends upon the appropriation allowed the department by the state legislature, and the federal appropriation for 1949.

"The above yearly expenditures represent approximately 60 percent of the yearly funds to properly improve our highways to adequately handle the traffic. It is only natural to assume that with the increase in construction costs per mile less mileage can be built, and with a definite mileage on the state system a longer period of time is required to develop the system. This means that definite heavy maintenance is required each year until construction can catch up with the highway needs."

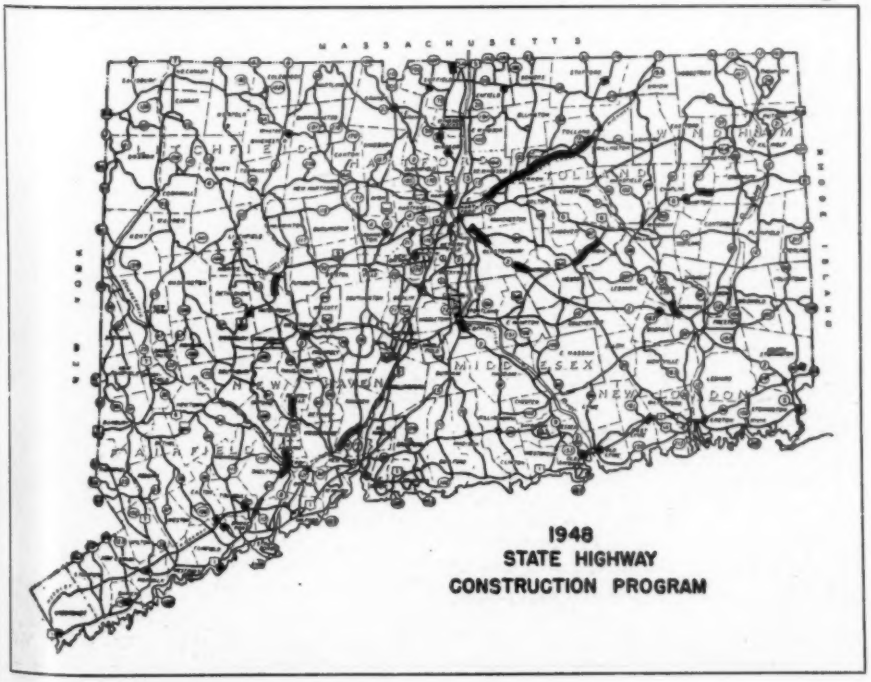
North Carolina "During the calendar year of 1946 we let to contract $21,503,499.33 of work involving 1766.6 miles. During the same period we did with our own forces and equipment $11,580,924.96 of construction and stabilization work.

"During the present calendar year we have already let $25,321,294.47, involving 1,279 miles, and have advertised a letting for December 16, estimated to cost $2,160,910.00. We have done with our own forces and equipment $13,110,800.00 of construction and stabilization work. This latter figure involves 746.8 miles of light type hard surfacing and a very large amount of stabilization of the secondary road system, including top soil, sand clay, gravel and crushed stone. The total amount of work let to contract and done with our own men during the present calendar year, including the estimated cost of the December 16th letting, amounts of $40,592,967.26. This involves the paving of 1,559 miles of secondary roads, and 210 miles of primary highways. We have been materially handicapped in carrying on this program due to lack of sufficient competent engineers to supervise the construction work as well as to take care of necessary location and preparation of plans.

"It is expected that our program of work next year will be very nearly as large as the program we have had during the current year. It may be necessary to slightly reduce this for the reason we will not be able to get out as many plans.

"The average cost of construction since the war has been approximately 80% greater than just prior to the war. This has had very little effect on the amount of work we have let to contract. We have had very good

• The state highway system outlined for 1948 for Connecticut.



competition in grading, and certain other types of work for which there seems to be a sufficient number of contractors. However, the competition has been less on structure work and the average cost of this type has increased since the war from 100 to 125% greater than it was previous to that time."

New York "New York State is now in the midst of the most extensive highway construction program in its history Highlighting it are the reconstruction of many portions of its existing 14,000 mile state highway system, construction of the new 486-mile Thruway, the launching of a vast program of urban arterial route construction and the construction of many new federal aid secondary roads.

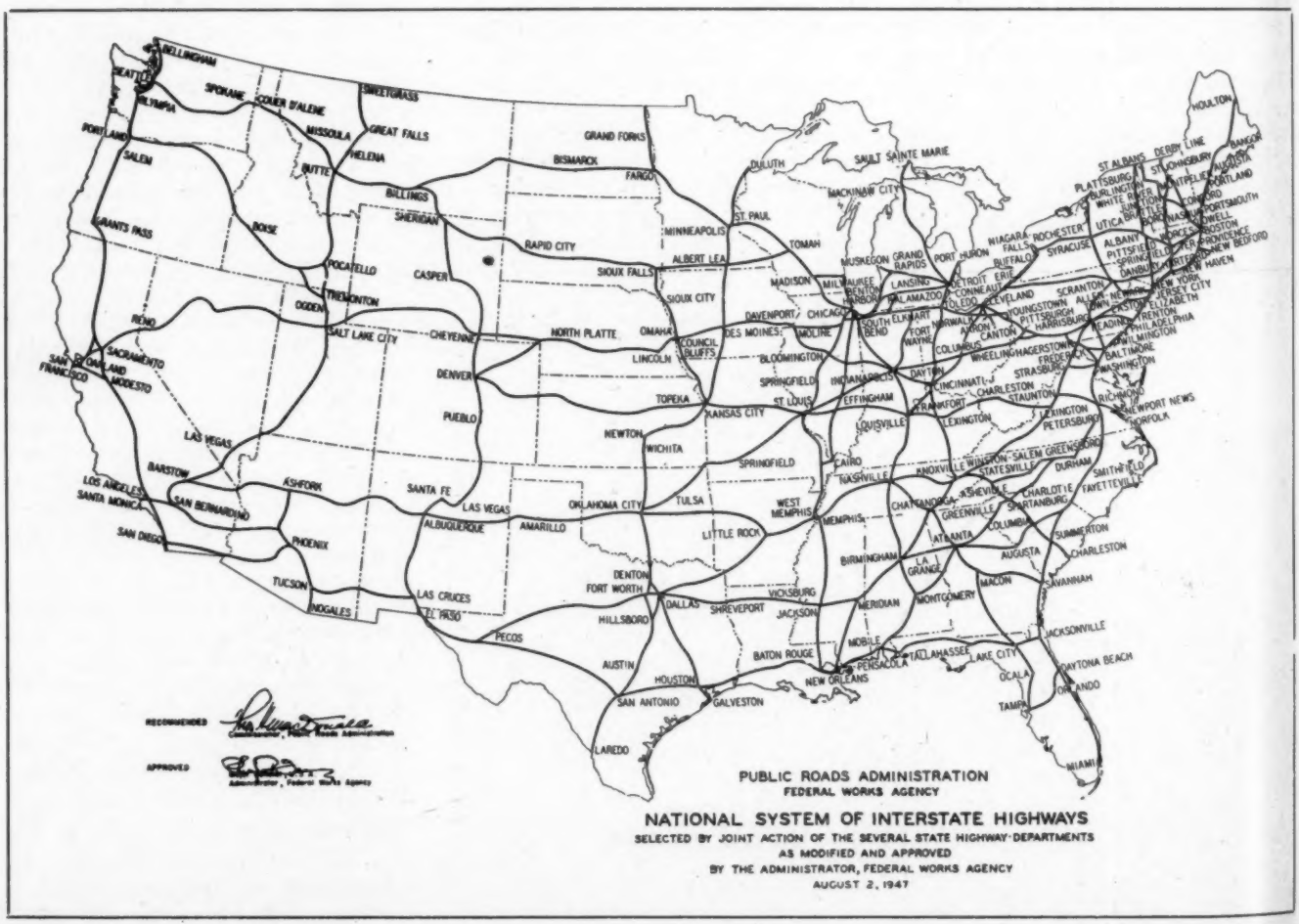
"Between January 1, 1947 and November 25, 1947 the New York State Department of Public Works awarded 99 contracts totaling nearly $42,000,000. Bids for another $2,500,000 worth of work were received on November 26 and projects totaling $25,000,000 more have been advertised for a letting on December 17. Between VJ Day and the end of 1946 New York State awarded 141 highway contracts at a total cost of about $58,000,000.

"In a recent report, New York State Superintendent of Public Works Charles H. Sells outlined a proposed long range program of highway construction through 1960. The total cost of this program has been estimated at $2,000,000,000 at an average annual rate of $143,000,000. The speed with which it will be advanced will be limited only by the amount of money available for it and the ability of the construction industry to absorb the projects as they are offered for bid."

Nevada "Nevada Highway Department spent six million three hundred thousand dollars constructing 234 miles of road in 1947. They have programmed for construction in 1948, 237 miles of roads at an estimated cost of six million five hundred thousand dollars. The work completed falls considerably short of actual needs but naturally it is confined to road funds available. The growing construction costs curtailed the mileage of reconstruction and new construction. Ample road aggregates were available in 1947 but cement supplies were somewhat short."

Minnesota "Highway construction got off to a slow start in Minnesota after the end of the war. The resolution of Congress releasing funds authorized by the Federal Aid Highway Act of 1944 came too late in the fall of 1945 to allow time for programming projects, advertising for bids, executing contracts and starting any work before the onset of winter.

"In 1947 there was somewhat less uncertainty than in 1946 as to material, equipment and wage scales; or, in other words it was more definitely known that prices would be somewhat higher and remain high. During the year bids were called for on 143 state trunk highway projects. No bids were received on 17 projects and bids rejected on 17 others. Contracts were awarded on 109 projects, at a total cost of $15,450,002. The work placed under contract included 270 miles of grading with necessary culverts, 218 miles of so-called interim surfaces, 75 miles of paving and shouldering, 218 miles of gravel bases, 40 miles of crushed rock or shale bases, 264 miles of bituminous surfaces, 11 miles of concrete and cement treated bases, 25 bridges, and some miscellaneous work such as roadside development, traffic signals and lighting.


PUBLIC ROADS ADMINISTRATION
FEDERAL WORKS AGENCY
NATIONAL SYSTEM OF INTERSTATE HIGHWAYS
SELECTED BY JOINT ACTION OF THE SEVERAL STATE HIGHWAY DEPARTMENTS
AS MODIFIED AND APPROVED
BY THE ADMINISTRATOR, FEDERAL WORKS AGENCY
AUGUST 2, 1947

• The system of interstate highways proposed by the Public Roads Administration (Federal Works Agency) for the United States.

"There are ample supplies of aggregates in Minnesota for paving and structural concrete, as well as for gravel and bituminous surfacing. Occasional but not serious transportation difficulties developed during the 1947 construction season.

"Some delays in concrete work were experienced due to shortages of cement and difficulties in transportation, but most of this type of work was completed before the season ended. Late in the season, when a shortage of cement hampered building construction, there was some agitation for curtailment of highway paving, but in the hearing it was brought out that highway paving used up only about 6 percent of the cement shipments. It is not anticipated that cement shortages will seriously hamper the 1948 program."

Kentucky "We let approximately $16,000,000.00 of new construction in 1946 and something like $21,000,000.00 so far this calendar year. Our program in 1948 should run approximately the same as for 1947.

"Along with all the other states, we find that our cost of doing work this past year far exceeded our 1946 prices and consequently the total miles constructed have been less than we had anticipated with the funds available; however, I believe that Kentucky ranks 4th in the number of new miles put under construction in 1947, and 11th in money value of new roads let in the calendar year."

Highway Construction—Contracts Awarded
Summary by State and Jurisdiction
January Through September—1947

	Total Highways		State Highway Depts. (All Projects)		County, City & Other Local Agencies	
	No. of Projects	Contract Value 1,000 Dollars	No. of Projects	Contract Value 1,000 Dollars	No. of Projects	Contract Value 1,000 Dollars
Total United States	12,531	832,610	8,574	677,748	3,957	154,862
New England	1,014	36,277	821	28,821	193	7,456
Connecticut	157	11,721	122	10,384	35	1,337
Maine	405	5,894	397	5,504	8	390
Massachusetts	372	12,105	244	7,007	128	5,098
New Hampshire	19	2,071	15	1,830	4	241
Rhode Island	13	1,627	7	1,564	6	63
Vermont	48	2,859	36	2,532	12	327
Middle Atlantic	2,337	149,890	1,385	114,746	952	35,144
New Jersey	403	22,398	24	14,196	379	8,202
New York	277	47,580	92	32,351	185	15,229
Pennsylvania	1,657	79,912	1,269	68,199	388	11,713
East West Central	2,185	132,212	1,061	87,016	1,124	45,196
Illinois	623	46,177	237	23,617	386	22,560
Indiana	185	13,936	92	11,690	93	2,246
Michigan	303	22,341	208	17,487	95	4,854
Ohio	731	28,802	280	18,847	451	9,955
Wisconsin	343	20,956	244	15,375	99	5,581
West North Central	1,823	96,631	1,231	75,893	592	20,738
Iowa	408	17,594	218	11,188	190	6,406
Kansas	337	19,078	255	14,433	82	4,645
Minnesota	381	20,640	250	17,511	131	3,129
Missouri	269	15,677	167	12,364	102	3,313
Nebraska	255	10,140	198	8,259	57	1,881
North Dakota	85	7,766	68	6,782	17	984
South Dakota	88	5,736	75	5,356	13	380
South Atlantic	1,784	131,199	1,476	118,291	308	12,908
Delaware	21	2,489	19	2,428	2	61
District of Columbia	21	10,374	21	10,374	.....	.....
Florida	172	22,799	115	21,583	57	1,216
Georgia	111	8,888	66	7,407	45	1,481
Maryland	158	10,941	59	5,539	99	5,402
North Carolina	301	21,945	267	19,364	34	2,581
South Carolina	313	15,015	301	14,543	12	472
Virginia	236	25,639	195	24,495	41	1,144
West Virginia	451	13,109	433	12,558	18	551
East South Central	596	60,008	520	54,515	76	5,493
Alabama	134	10,340	108	7,841	26	2,499
Kentucky	239	17,283	217	17,086	22	197
Mississippi	123	16,177	115	15,005	8	1,172
Tennessee	100	16,208	80	14,583	20	1,625
West South Central	1,238	97,158	1,078	86,702	160	10,456
Arkansas	132	14,004	125	13,364	7	640
Louisiana	230	12,827	209	11,981	21	846
Oklahoma	175	9,211	141	7,664	34	1,547
Texas	701	61,116	603	53,693	98	7,423
Mountain	420	40,624	366	38,792	54	1,832
Arizona	70	7,497	43	6,681	27	816
Colorado	98	8,720	95	8,603	3	117
Idaho	26	2,963	23	2,924	3	39
Montana	24	2,771	17	2,622	7	149
Nevada	19	2,814	16	2,572	3	242
New Mexico	75	5,704	74	5,702	1	2
Utah	49	4,521	40	4,114	9	407
Wyoming	59	5,634	58	5,574	1	60
Pacific	1,134	88,611	636	72,972	498	15,639
California	701	54,776	400	45,776	301	8,999
Oregon	104	16,158	83	15,190	21	968
Washington	329	17,678	153	12,006	176	5,672

Federal Works Agency

Kansas "We put under contract construction work in the amount of approximately twenty-five million dollars during 1946, and our total for 1947 will be approximately twenty-three million dollars.

"We have, at the same time, carried on a large maintenance and resurfacing program. The completion of work has been handicapped somewhat by shortages of materials, but in general the work has been proceeding satisfactorily.

"We have had a fair number of bidders for the majority of our projects, and have had but few projects on which we did not receive bids to date. There has been no unreasonable delay due to lack of aggregate and cement supplies."

Iowa "So far as actual construction work accomplished is concerned, as of November 1, 1947, we finished approximately $8,000,000 worth of work on primary roads. Similarly, as of November 1, 1947, contracts that had been let and not paid for on our Farm-to-Market Road Systems amounted to $3,766,000.

"In my opinion, our actual needs far exceed both our ability to get the work done and our ability to finance needed highway work. During the postwar period, it is our opinion, and in this opinion we have the concurrence of the local contractor's association, that we have brought to letting just about as fast as the contractors have been able to absorb it. Consequently, in this period, our ability to finance work has not been a limiting factor. In the years ahead, however, we anticipate that the contractors will be able to expand their operations through procurement of more equipment and the availability of more and better labor, and then our ability to finance the improvements will be the limiting factor."

Mississippi "The Highway Department is engaged in the prosecution of a $62 million con-

(*Continued on page* 109)

Construction Trends in 1948

New Construction Activity in 1948 Promises To Pass the $15 Billion Mark

By EDWARD BRUNENKANT

IN order to appraise the current inflationary trends, F. W. Dodge Corp., the construction industry's top factfinders, conducted a survey of leading economists. While there were wide variations of thought among the experts there seemed to be sufficient correlation of opinions to indicate general agreement. A majority of the economists replying said that they expect moderate declines in industrial production and employment and a slight increase in the dollar volume of construction. Most of those polled expect a business recession in 1948, although, by a considerable majority, they hedged by characterizing this downswing as "mild" or only "moderately serious."

You can't really blame the economists for pulling in their horns. Last year, construction, with a whoppingly healthy $12.5 billion activity, led the attack against those who were foolhardy enough to prognosticate a recession. In 1948 construction activity looks forward to an even bigger dollar expenditure—$15.2 billion. However, construction progress in '48 is very likely to directly reflect (1) the public resistance and hostility to further price increases, and (2) the size and scope of the Marshall Plan.

High costs are generally conceded to be the principal problem of the building industry. The general consensus of opinion indicates that there will be no leveling off of the price spiral—at least, not until there is a halt in the upward movement of commodity prices. Very probably, by the end of 1948, the industry will have recorded an overall price increase averaging around 7 percent.

There is no question of the fact that further upward dislocations in the prices of residential construction will act as a strong deterrent to stepped-up building progress. Standard & Poor's had this to say: "High costs have already caused the postponement of numerous construction projects, particularly in the industrial category. On the other hand, some corporation executives are convinced that high construction costs are here to stay and accordingly are proceeding with expansion plans." In the industrial category, F. W. Dodge estimates a drop from $900 million in 1947 to $775 million in 1948.

Despite public clamoring for price relief, there seems little likelihood of Congressional action on this serious problem. Some ineffectual bills undoubtedly will be passed this year, in an effort to tie down inflation, but neither political party appears willing to take the chance of throwing a monkey wrench into this era of boom prosperity.

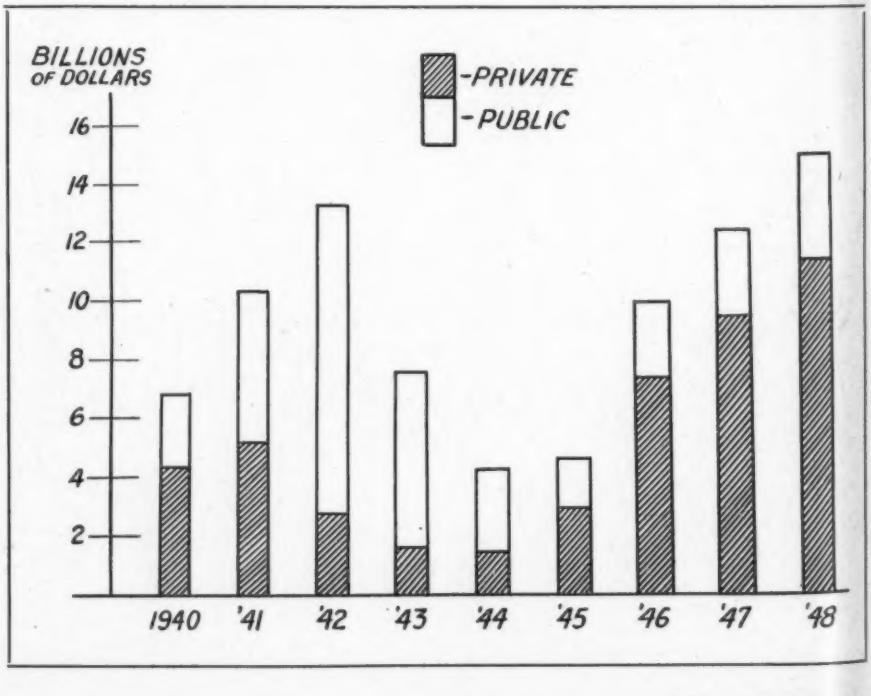
It is believed that the Marshall Plan, without considering the long range social-political ramifications, will undeniably act as a powerful jack counteracting any possible recessionary trends. Probable expenditures in 1948 under this program are, in itself alone, a strong stimulant for the maintenance of high employment, wage and price levels.

More than half of the construction industry is unionized. Accustomed at times to long periods of unemployment, the building trades had entered into restrictive practices designed to limit the number of apprentices and to force the payment of excessively high hourly wages. However, labor has shown a marked improvement in both supply and attitude. According to Department of Labor figures, the number of apprentices as of September, 1947 was 105,000 as compared to 89,300 a year earlier. This is most encouraging and all indications point toward further increases in the number of new men admitted into the skilled building crafts.

By far the most serious problem confronting the building industry is the general low productivity of the individual worker. Much publicized—probably too much—is the case of the bricklayer who, several years ago, could lay 1000 bricks a day. Today the same man can only lay-up 500 bricks. Frankly we're stumped (along with everyone else) for a solution to the problem and although we are not inclined to be pessimistic we don't foresee much improvement of this chronic condition in 1948.

Administered under the stern hand of Robert Denham, chief counsel of the N.L.R.B., the Taft-Hartley Act, with its provisions against the closed-shop and secondary boycott, has favorable implications for the construction industry. It will be necessary, however, for the court to define the extent to which the new law may correct labor union abuses. There seems little chance for the law's repeal in '48, although certain sections may be amended to make it more acceptable to the unions and, perhaps, more workable.

A number of key construction materials were in tight supply in 1947. They included millwork, nails, gypsum lath, plumbing fixtures, cast iron soil pipe, cement and aggre-



• 1940-47 construction totals, with estimated 1948 figure.

New Construction Estimates: 1947 and 1948[1]
(Millions of Dollars)

	1947[2]	1948
Total new construction	12,665	15,200
Total private	9,730	11,375
Residential (excl. farm)	4,800—	6,000
Nonresidential building	3,165—	3,250
Industrial	1,695	1,350
Warehouses, office and loft bldgs	260	275
Stores, restaurants and garages	620	850
Other nonresidential building	590	775
Farm construction	450—	500
Public Utility	1,315—	1,625
Railroad	315	350
Telephone and telegraph	440	550
Other public utility	560	725
Total public	2,935	3,825
Residential	175	100
Nonresidential	500—	850
Industrial	30	25
Educational	255	375
Hospital and institutional	75	225
Other nonresidential building	140	225
Military and naval	195—	250
Highway	1,190	1,500
Sewer and water	300	375
Misc. public service enterprises	115	125
Conservation and development	375	475
All other public	85	150

[1] Joint estimates of Department of Commerce and Department of Labor.
[2] First 10 months actual; last 2 estimated.

gates. As most of the industries producing these scarce construction materials operated near top capacity in '47 (with allowances for those companies who were hampered by lack of steel) any appreciable increase in construction volume can only result in further tight supply in 1948 and possible stricter allocations of materials to the trade.

The highly critical shortage of freight cars is likely to limit local supplies of construction materials in 1948 despite current car production of nearly 10,000 cars a month. In addition, the Economic Advisory Committee to the President has recommended that we send at least 20,000 freight cars to Europe and to the extent to which this order is met American railroads will have to accept deferred delivery in 1948.

In the last analysis, new construction activity in 1948 will hinge on consumer willingness and ability to meet higher prices, the availability of key construction materials, labor productivity, and the degree of our pledge under the Marshall Plan. However, we expect an improvement in the construction activity—more starts and completions—with a 1948 expenditure approximating $15.2 billion.

$1,200,000,000 for Roads

(*From page* 107)

struction program involving federal funds unexpended from previous balances plus the federal aid available in the Postwar Highway Act of 1944 and embracing federal funds allocated for the fiscal years 1946, 1947 and 1948. At the end of this year we will have obligated $37 million of this $62 million, having obligated during the past year (1947) approximately $24 million on construction work. This includes the entire contractual obligation plus rights of way, overhead and administration. During the coming year (1948) we will in all probability expend at least 75 percent of the $25 million authorization remaining.

"The effect of the growing construction costs on our program to date has seriously curtailed the amount of work that can be expected from the available funds, and continuing highway costs will affect any future program that we might have involving additional expenditure to the extent that possible continuation of a highway construction program will probably be curtailed.

"We furthermore consider the inadequacy of available contractors, together with a still depleted engineering force which has never been brought up to prewar levels."

Nebraska "During the year 1947 the Nebraska State Highway Department awarded contracts in the amount of $8,500,000, consisting of the following:

Awarded—by type	Miles or Number
Rigid pavement	23.38
Pavement widening and resurfacing	7.54
Bituminous mat—new	92.868
Bituminous mat — reconstruction	72.985
Grading and drainage	316.608
Bridges over 20-foot span	61
Viaducts (R.R. grade crossing eliminations)	3

"In addition to the above expenditures, the state will spend about $4,800,000 on maintenance on a 9,300-mile system, of which 4,800 miles are gravel surfaced. There also has been obligated for new equipment about $800,000. Estimated expenditures for 1948 on these three items are as follows:

New construction and major reconstruction . $12,000,000
Maintenance 5,000,000
New equipment 500,000

"Both maintenance and construction expenditures for 1948 will involve about a million dollars' worth of gravel surfacing.

"Our 1947 contracts that were awarded prior to October 1st are about 85 percent complete. In addition to this progress a large carryover from 1946 has been cleaned up.

"Lack of equipment and delays in securing equipment have resulted in curtailing our contemplated program for 1947. High prices and shortage of engineering personnel also materially affected this program. In 1948 we contemplate about the same mileage of construction items as listed above for 1947."

South Carolina "During the year of 1947 the South Carolina State Highway Department has been kept unusually busy in getting under way as much of its construction program as possible. We are now in the third year of the Federal Program for which funds were provided in the 1944 Federal Aid Act; and in the second year of our state Three Year Farm-to-Market Program, provisions for which were made by the 1946 General Assembly. The total of these programs, covering a four year period, is approximately $68,000,000.00.

"During the calendar year the department has placed under construction 205 road projects, totaling 1,025.5 miles, at an estimated cost of $15,410,000, including engineering and contingencies; 49 bridge projects totaling 11,454 feet at an estimated cost of $3,660,000.00; and 121 retreatment projects totaling 1,012.2 miles at an estimated cost of $3,100,000.00.

"Although there seems to be more labor available, there is still a scarcity of skilled labor and the efficiency of labor has increased very little. Contractors have been hampered to a considerable extent by their inability to secure proper equipment and also by the fact that they have attempted to use the heaviest type grading equipment, which was so efficient on war work, in the construction of roads with little earth work."

OPERATION OF THE PILOT-SIZE FLUOSOLIDS LIME REACTOR

DURING the war, in the search for better ways of producing petroleum products by catalytic treatment, the Standard Oil Development Co. discovered the usefulness of solids fluidization to promote intimate contact between

By F. S. WHITE
Assistant to the President, New England Lime Co.

catalyst and the reacting oil vapors. Briefly the method devised consisted of suspending the finely-divided catalyst in an upward-flowing stream of gaseous reactants. The suspended solid mass took on the properties of a liquid, i.e., exhibited hydrostatic head, flowed through pipes, and took the shape of the confining vessel. In addition the solid phase was found to be homogenous and uniform in temperature. Heat transfer rates between solids and gas were found to be almost infinite.

The value of this new technique for uses outside the petroleum field were quickly recognized. The Dorr Co. subsequently was licensed under appropriate patent rights of the Standard Oil Development Co. to apply this new-found knowledge to non-catalytic applications in fields other than the petroleum and fuel fields. The officially-adopted name for such applications is the Dorr FluoSolids system and the kiln or furnace in which the reaction takes place is known as the Dorr FluoSolids Reactor. One of the first applications envisaged was the burning of lime.* Because it was thought that the solids had to be finely ground (–65-mesh) to be successfully fluidized, the early work was unsuccessful due to very high dust losses. Some time later, methods of handling coarser materials up to 6-mesh were devised. The problem then seemed worthy of re-investigation.

Limestone from the quarry of the New England Lime Co. at Adams, Mass., was selected since, due to its crystalline nature, it could be crushed to produce an ideal feed. Laboratory results with this feed in a single-compartment reactor of 4-in. diameter were very satisfactory.

Consequently the New England Lime Co. management was approached and they agreed to build a pilot-size unit to be designed by the Dorr Co. Subsequently, design of a 3-compartment 5-ft.-dia. reactor was started. Construction of this plant was completed in July, 1946, and test operations were then initiated.

Referring to Fig. 1, a simplified cross-sectional view of the reactor, and Figs. 2 to 7, photographs of the plant, it will be seen that the reactor consists of a cylindrical steel shell 7 ft. in diameter by 25 ft. high, lined with 12-in. firebrick. Division into three compartments is obtained by two refractory "constriction" domes. Limestone crushed to pass 6-mesh is fed to the kiln by a Jeffrey feeder, then elevated and conveyed to the upper compartment feed pipe. The material drops by gravity into the upper bed, where it is fluidized and preheated to 1,100 deg. F. by combustion gases rising from the calcining compartment. Incoming material displaces hot stone which flows via a transfer pipe to the center compartment.

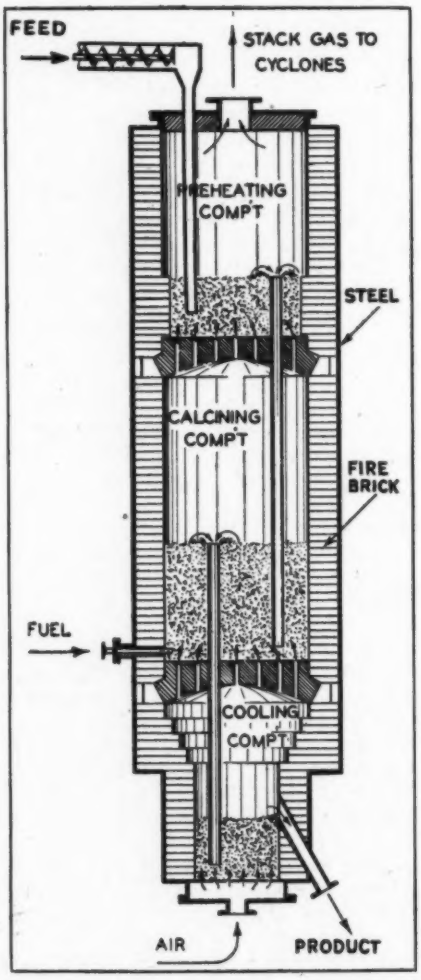


Fig. 1. A simplified cross-sectional view of the pilot reactor.

Here the material is fluidized by hot air and combustion products. Bunker C fuel oil is injected in metered quantities at eight points around the bottom periphery of the bed, where it burns on the surface of the suspended lime particles. Due to the large surface exposed the liberated heat is absorbed instantly by the charge, causing the limestone to calcine. When starting this furnace, initial calcination at temperatures as low as 1,480 deg. F. (depending on the partial pressure of the CO_2) have been observed. A working temperature of 1,700-1,750 deg. F. generally enables an equilibrium mixture of lime to stone of 99:1 to be maintained. This equilibrium can be shifted up or down by varying detention time or temperature.

Finished lime is quantitively displaced by advancing stone and flows downward to the cooling compartment, where it is cooled by an uprising air stream. The hot air at 500-600 deg. F. flows upward to the calcining compartment, while the cooled lime is taken off through a discharge valve and conveyed to the storage bins of the main plant.

Since the principle of combustion of directly-injected fuels does not apply at temperatures much below 1,100 deg. F., a preheating torch using light fuel oil is fired in the lower compartment to bring the reactor up to the minimum temperature at which time the regular burners can be started.

It is during this startup period that one can get a clear picture of the mechanics of the calcination. When the main burners are started the temperature rises quite rapidly to about 1,480 deg. F., whereupon the rise becomes very much slower, the heat being absorbed by the reaction. This continues until the bed is completely calcined, by which time the temperature has risen to 1,600 deg. F., indicating that a working differential of temperature equivalent to 0.4 atmospheric CO_2 is necessary to evolve the CO_2.

When the initial bed is completely calcined the temperature breaks through, again rising rapidly. Feed is re-started and the temperature

*Fluidization as Applied to Non-catalytic Operations, R. P. Kite and E. J. Roberts, *Chem. & Met. Eng.*, Dec., 1947.

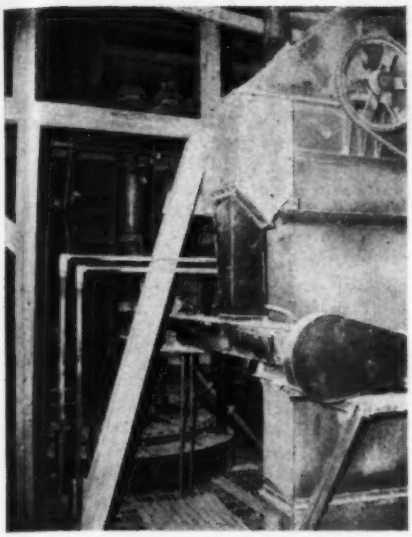


Fig. 2. A view of the upper section of the reactor, showing the feed conveyors and the cyclone collectors.

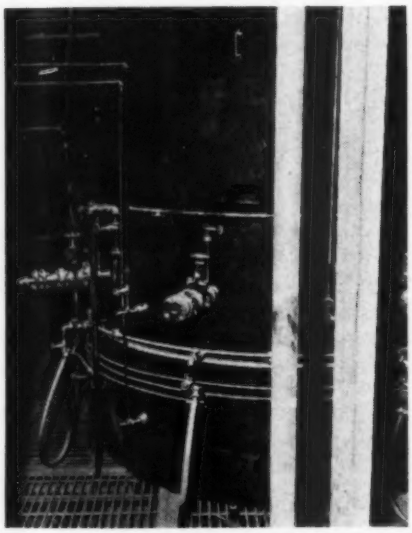


Fig. 3. A side view, showing the burner arrangement.

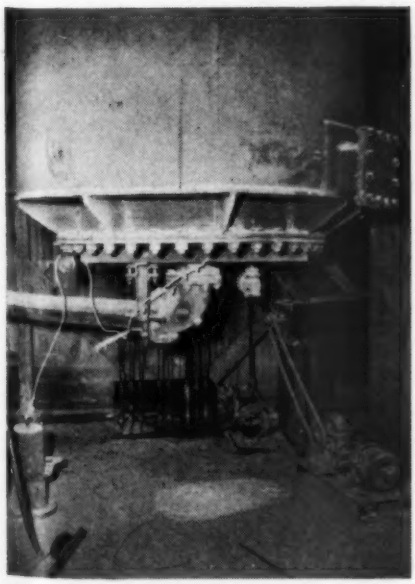


Fig. 4. The bottom section, which shows the oil pump and the product conveyor.

stabilized at the desired point. Orsat analyses are taken to check so that the fuel is in balance with the air flow. Heat input is maintained for the desired production rate. Feed input is regulated to hold the desired temperature.

Two troubles were encountered in the pilot operations. The first was a scale deposit on the holes of the upper constriction plate. This problem was solved by trial and error, which came fairly easily when it was realized finally that the deposit was formed by the flow pattern of the gases.

The second trouble was that it was not found possible to recycle entrained dust. Due to progressively higher gas viscosities and volumes encountered as the material progressed to the center compartment, a barrier was formed which the dust could not penetrate. The circulating load thus formed destroyed the effectiveness of the upper compartment as a preheater. This problem was never solved but was circumvented by removing the fine fraction of the feed by air classification prior to the furnace. A feed of 90-95 percent plus 100-mesh was processed with dust losses of the order 5 percent at an 11.0-T/D production rate. This compares favorably with the design capacity of 8.5-T/D.

Experience to date on the pilot plant has shown that the reactor has many advantages over more conventional equipment. Some limitations have also become apparent. Among the advantages are the following:

(1) *Close temperature control.* Temperatures can be held to within 10 deg. F. of the desired optimum burning temperature. This enables an absolutely uniform product of high availability (98 percent of theoretical) and low, (0.6-0.8 percent) residual CO_2 content to be produced. Overburning and reaction of impurities with the lime with subsequent lowering of the availability can thus be prevented. Slaking properties can be altered at will by control of temperature and detention time.

(2) *Efficient Combustion.* Because the fuel and air are closely metered, in stoichiometrical ratios, combustion is complete and efficient. A typical flue gas analysis is:

	Percent
CO_2	32.0
O_2	0.8
CO	0.2

(3) *High thermal efficiency.* The unique method of liberating and utilizing the heat of the fuel makes high thermal efficiency inherent in the process. Although the pilot plant has only one heat recovery stage on the exhaust gases, and although the ratio of radiating surface to working area or capacity is much larger than it will be in a commercial reactor, fuel consumptions comparing favorably with the best present day commercial equipment were obtained, averaging 42 gals. Bunker C oil per ton of product made. Applying the data thus obtained to the larger unit now under design, consumptions one-fourth lower are forecast.

(4) *Maintenance and operating requirements are low.* Brick repair, one of the chief items of maintenance in rotary kilns, appears negligible for the FluoSolids reactor. Thirteen heats were made, yet there was not a single brick

Fig. 5. The upper compartment as seen through the top manhole.

Fig. 6. The center compartment, showing the condition of the refractory.

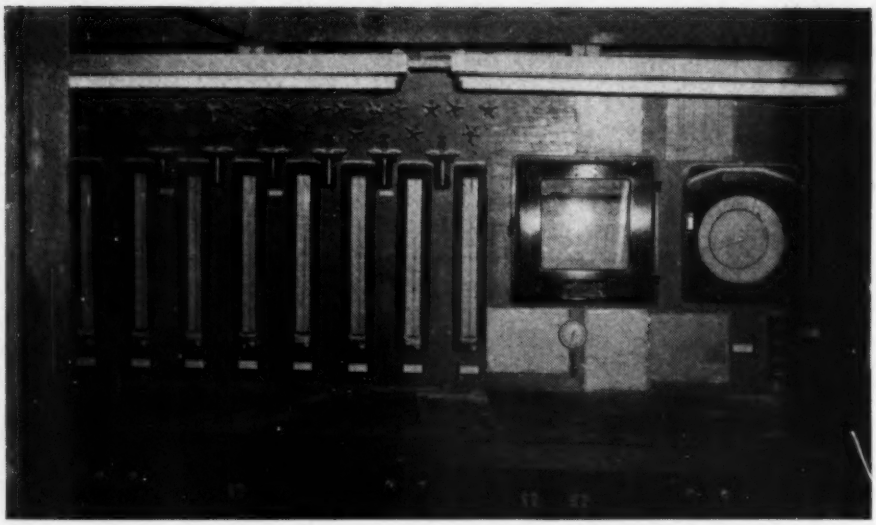


Fig. 7. The instrument panel.

failure. In fact, the original wash coat of grout is still intact on the brick surface. The absence of fans handling hot gases or heavy moving parts eliminates other maintenance items now present with rotary and shaft kilns.

Because the reactor lends itself well to instrumentation and automatic control, labor costs per ton of product should be very reasonable. Balancing items are the additional costs of feed preparation and compression which are 30 kw.h./ton CaO.

The chief limitation of the Fluo-Solids lime reactor is that it is restricted to burning finely-sized stone, which must have the physical stamina to withstand the sharp terminal shocks encountered in the process and the abrading action of the fluid motion. Such stones as meet these requirements should be amenable to treatment by the fluid process using locally available fuels, whether gaseous, liquid, or solid. Much work remains to be done with limestone from a variety of deposits, using fuels other than oil, before the full value of the process to the lime industry will be known.

The commercial reactor, now under design, is illustrated by Fig. 8, a cross-sectional view. The only essential difference between this unit and the pilot unit is in the number of preheating compartments. Three stages are planned, which will lower the exhaust gas temperatures to about 800 deg. F. Better insulation and the decreased ratio of radiating area to working capacity will lower radiation losses. These changes chiefly account for the improved efficiency to be expected over that demonstrated by the pilot unit.

The writer wishes to express his appreciation to the many engineers of the Dorr Co. and the New England Lime Co. whose joint efforts accounted for the success of this project and to the management of both companies, more especially to R. P. Kite, assistant manager, Dorr Development Department, and Dr. E. J. Roberts, research director for Dorr; C. C. Loomis, president and D. Follett, superintendent, for New England Lime Co.

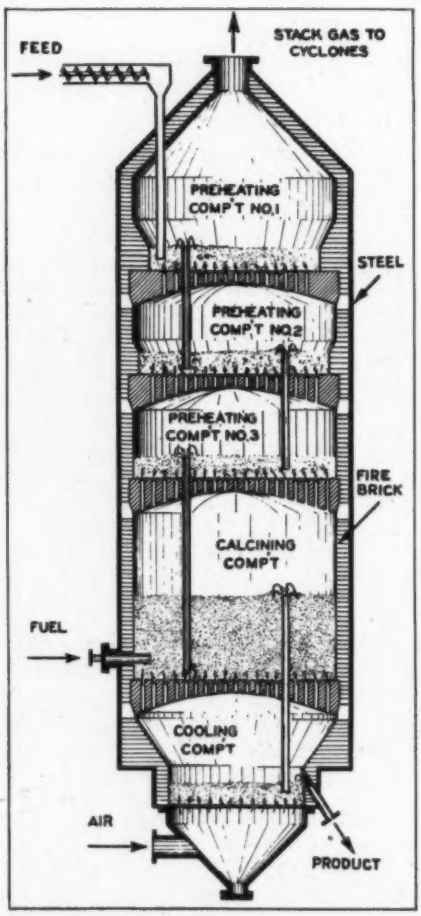


Fig. 8. A cross-sectional view of the reactor now under design.

Natl. Safety Council Issues 1947 Accident Facts Yearbook

The nation's bill for occupational injuries during 1946 totaled approximately $2,400,000,000, of which about $1,100,000,000 represented the immediately visible costs to both workers and industry including wage loss, expense of medical care and overhead cost of compensation insurance.

The remaining $1,300,000,000 represented the estimated money value of damaged equipment and materials, production slow-downs and time lost by other workers not involved in the accidents.

Working time lost during last year, directly and indirectly, as a result of disabling injuries totaled about 280,000,000 man-days—equivalent to the working time of nearly 1,000,000 men for a year.

These are just a few of the thousands of facts contained in the National Safety Council's yearly statistical survey of the nation's accident picture.

The *Accident Facts* yearbook contains complete statistical information about safety in industry, at home, at school, on farms and on the road. It serves as a source book for those interested in the advance of safety.

The 1947 edition of *Accident Facts* is available from the National Safety Council, 20 North Wacker Drive, Chicago 6, Ill. Copies are 50 cents each in quantities of less than 100, and 40 cents each in larger quantities.

Bauxite Production Drops But Imports Hit New Record

Domestic production of bauxite again declined in the third quarter of 1947, continuing the downward trend indicated in the second quarter, according to the U. S. Bureau of Mines. However, imports of bauxite during the quarter established an all-time record, and importation during the first three quarters was at an annual rate approximately 11 percent greater than in the previous record year, 1943.

Production totaled 336,445 long tons (285,978 dried equivalent) in the third quarter, or 6 percent less than that of the preceding quarter. Total imports during the third quarter of 1947 were 509,577 long tons, an increase of only 3 percent over the preceding quarter, but a new record.

New Oregon Concern Produces Lite-Rock from Shale and Clay

Northwest Aggregate, Inc., a new concern organized by three World War II veterans,—K. C. Bergstrom, R. E. Brooke, and Alvin C. Warren—is currently producing a lightweight aggregate designated as Lite-Rock near Banks, Oregon.

This product averages only 1010 pounds to the cubic yard and is produced by burning shale or clay under a patented process and permitting it to expand. Its resulting cellular structure accounts for Lite-Rock's insulating qualities.

Mr. Bergstrom is president, Mr. Brooke, vice-president and Mr. Warren, secretary-treasurer. Harry Alton is production manager.

Permanente Cement Co. Capacity Now 5,500,000 Bbl. Annually

By HARRY F. UTLEY

another ON THE SPOT report

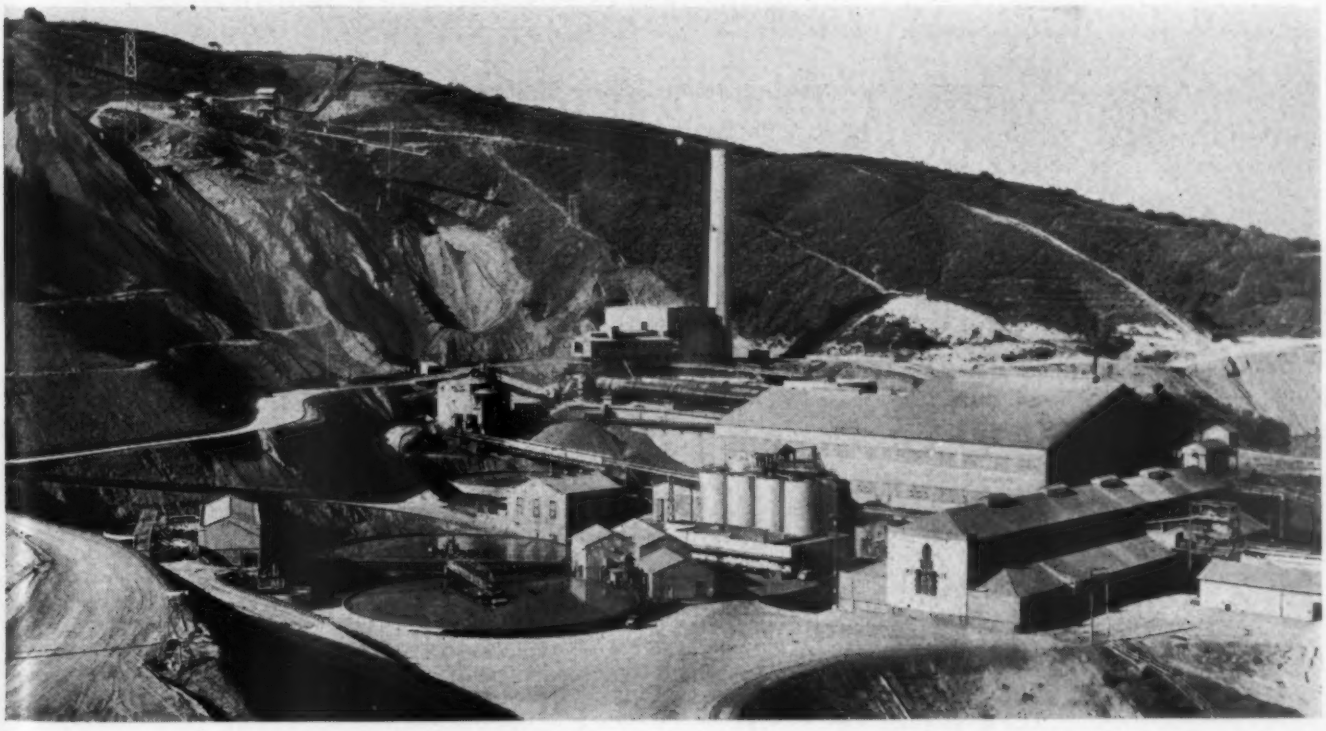
PROBABLY the most publicized cement plant in the world, the Permanente Cement Co. operation at Permanente, Calif., is again attracting attention following the completion of its latest improvement program. Having already attained what is said to be the largest production of any cement plant—5,000,000 bbl. annually—the improvements just completed have stepped capacity up still another 10 percent, bringing the total to about 5,500,000 bbl. per year.

Much has appeared in the pages of PIT AND QUARRY covering the building and operation of the Permanente plant since initial production was achieved on Christmas Day, 1939, when two kilns went into service to begin producing the cement for mighty Shasta Dam; again in 1940, when a third kiln was added, as well as the year following, when the fourth kiln went into operation. Reaching the full production capacity envisioned by Henry J. Kaiser and his able organization coincident with this country's entry into World War II, Permanente stopped building and began producing on a scale previously unknown in the industry. Boatload after boatload of portland cement in bulk steamed into the Pacific to build the island fortifications which helped stem the tide of battle and ultimately spelled victory.

At the end of hostilities the new program of improvements looking toward improved efficiency, increased production and lower operating cost was instituted and has just now been completed. This has included the erection of an additional reinforced-concrete kiln-feed slurry tank of 13,000-bbl. capacity, equipped with Dorr-type agitators; installation of four Fuller air-quenching inclined-grate clinker coolers on the four 12- by 463-ft. kilns; two new Traylor Type TY 3-ft. reduction crushers for crushing the clinker and the rearrangement of the conveyor system for handling the clinker; some interesting developments in the raw- and finish-grinding departments which enable the plant to step up grinding output without important physical change in equipment; and an expansion of packhouse facilities.

The last of the four Fuller coolers has just been placed in service under the discharge end of the fourth kiln. The first two went into operation in 1946; the third early in 1947. The coolers are said to be the largest of their type ever built, being 7- by 40-ft. in size. They are held largely responsible for the increase in production attained by the kilns. A smaller, more friable, more nearly ideal clinker is being produced than was formerly possible, simplifying crushing and finish-grinding operations. Especially noticeable has been the improvement in the heat-recuperating stage, which now supplies preheated secondary air to the kilns at about 1,200 deg. F., compared with around 700 deg. as was the case when the old coolers were being used. This improvement in combustion has permitted the firing flame to be shortened to about 40 ft., in contrast to the former 60 ft., to gain increased efficiency in the burning zone of the kilns and a resultant higher clinker output. Hot-zone linings were moved correspondingly closer to the nose of each kiln while each was down for the cooler installation. Permanente, incidentally, uses a special periclase-magnesia basic refractory brick in the hot zone instead of the conventional 70 percent alumina. These are produced at the Kaiser-owned Moss Landing magnesia plant and service records prove the choice to have been wise and profitable.

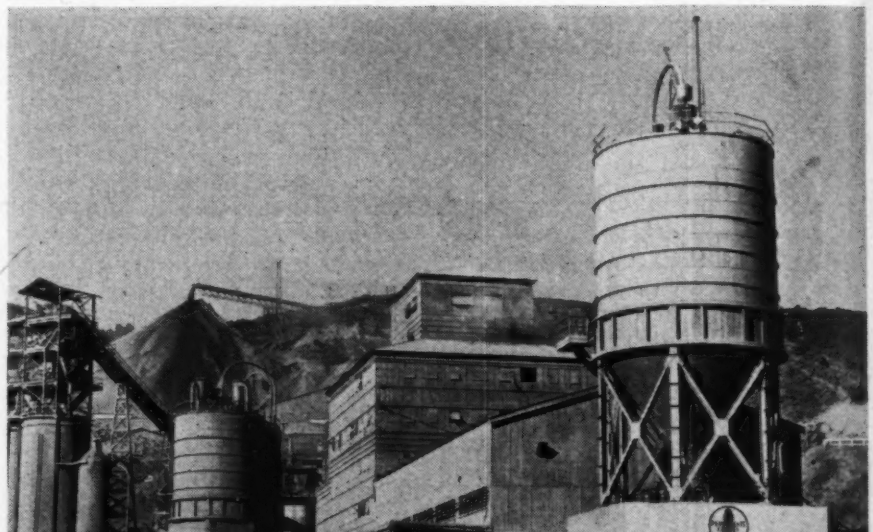
Raw-grinding capacity had been fully utilized before the burning ca-



• A general view of the Permanente Cement Company's plant at Permanente, California.

pacity was increased, and the addition of more equipment would have posed a serious problem since the grinding department was so compactly laid out that enlargement would have entailed considerable expense and complicated the arrangement of the various units. However, Permanente ingenuity in the person of General Superintendent J. W. Sharp and Mill Superintendent P. M. Olive came up with the answer in a rather spectacular manner.

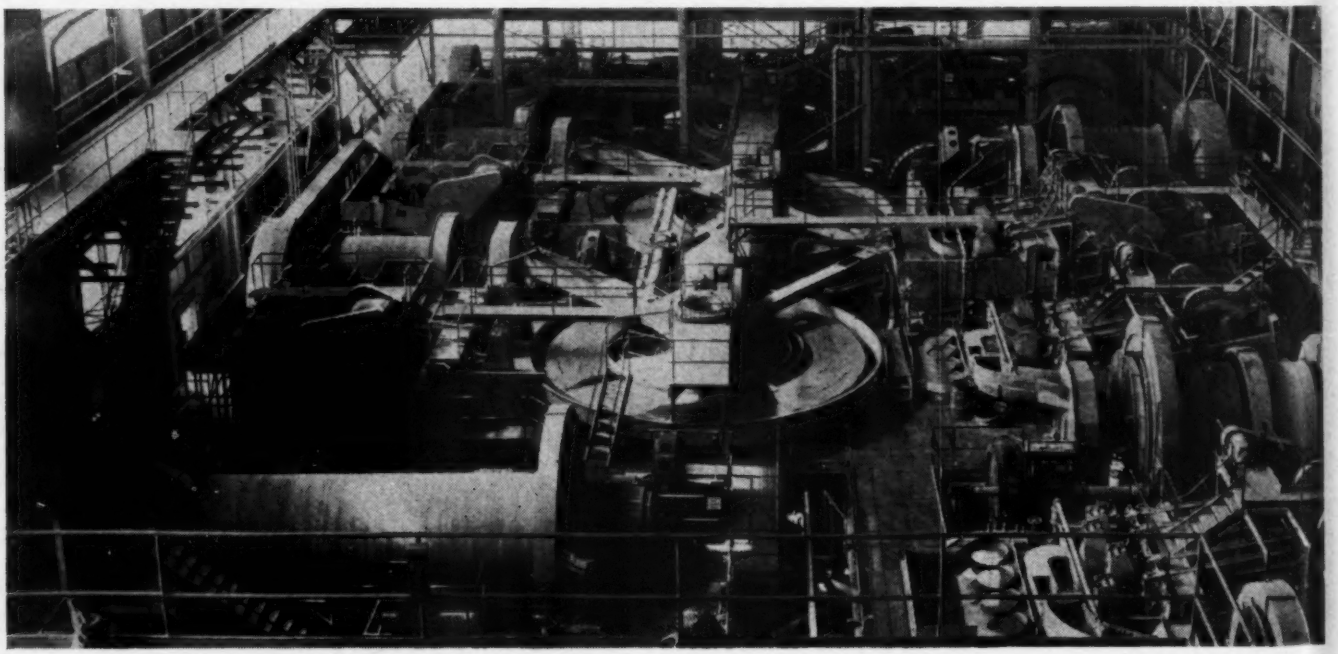
The raw-grinding department consists of three 9½- by 10-ft. primary ball mills closed-circuited with three 12- by 31½-ft. quadruplex FX multizone Dorr rake classifiers, four 9½- by 10-ft. secondary ball mills in closed circuit with four Dorr 25-ft. bowl classifiers, two 150-ft. Dorr thickeners, and one 125-ft. Dorr thickener. The flow through this circuit had been by the conventional practice of feeding the minus ½-in. crushed limestone to the primary mill, which discharged into the rake classifier, the rejects (or rake sands) being returned to the primary mill, with the overflow product going to the bowl classifiers. Rejects from the bowl classifier were fed to the secondary ball mill, the bowl classifier product (about 95 percent passing 200-mesh) being



• Upper right: Looking along the four kilns toward the firing ends. The four stacks were recently erected as a part of the new cooler installation.

• Right: The packhouse was recently enlarged by the erection of the 50- by 100-ft. addition shown at the right. The conical-bottom steel bin, also new, loads bulk-cement trucks.

• Below: A view showing the arrangement of equipment in the raw-grinding department. Increased grinding capacity was gained by an ingenious new circuit without disturbing the already compact equipment setup.



pumped to the thickener tanks for dewatering.

One of the troublesome problems in this operation had always been the lack of sufficient primary raw-mill capacity in order to maintain a full load on the secondary mills, since there are only three primary mills as against four secondary mills. To further complicate this condition, one of the primary mills is also used about eight hours a day for grinding shale slurry.

It had been the practice in this operation to split between the primary grinding and secondary grinding on the 14-mesh screen; in other words, all the feed to the secondary bowl classifiers was 100 percent passing the 14-mesh sieve. A typical sieve analysis of the limestone fed to the primary mills follows:

Sieve Size	Percent Passing
¾ in.	100
½ in.	98
⅜ in.	85
No. 4 mesh	61
No. 8 mesh	40
No. 14 mesh	26
No. 48 mesh	23
No. 100 mesh	18
No. 200 mesh	13

On the basis of this anaysis it is readily apparent that some 26 percent of the crushed limestone is finer than 14 mesh and is, therefore, ready for the secondary grinding circuit. This fact led Mr. Sharp to conclude that the crushed limestone should be fed directly to the primary rake classifiers rather than to the primary mills.

The results have been both astounding and pleasing. Formerly each primary ball mill ground approximately 60 t.p.h. to the required fineness. The new circuit—feeding the stone directly to the primary rake classifiers—has increased the capacity of these mills to approximately 85 tons each per hour grinding to the same required fineness! One can readily understand why this change in the circuit would increase the mill capacity some 20 to 25 percent. The only explanation for the unexpected increase of approximately 40 percent is that the elimination of the slimes or fines from the primary mill feed has increased the grinding efficiency of these units.

This single change in the flow of material has not only balanced the primary grinding circuit but has, in fact, even provided excess primary grinding capacity. Total raw-grinding capacity has actually been increased by some 850 tons per day—equivalent to about 3,000 bbl. of clinker per day—or more than enough to match the stepped-up calcining capacity!

The finish-grinding department has been speeded up to handle the increased clinker output by the simple expedient of utilizing smaller grinding balls in both primary and secondary mills. The crushing of clinker to smaller size, together with its improved grindability, gained by air-quenching, have permitted this change in grinding media. The small-diameter ball charges now grind largely by attrition, whereas the larger balls formerly used in the mills ground by impact to a large extent and consequently required longer grinding time in a given circuit.

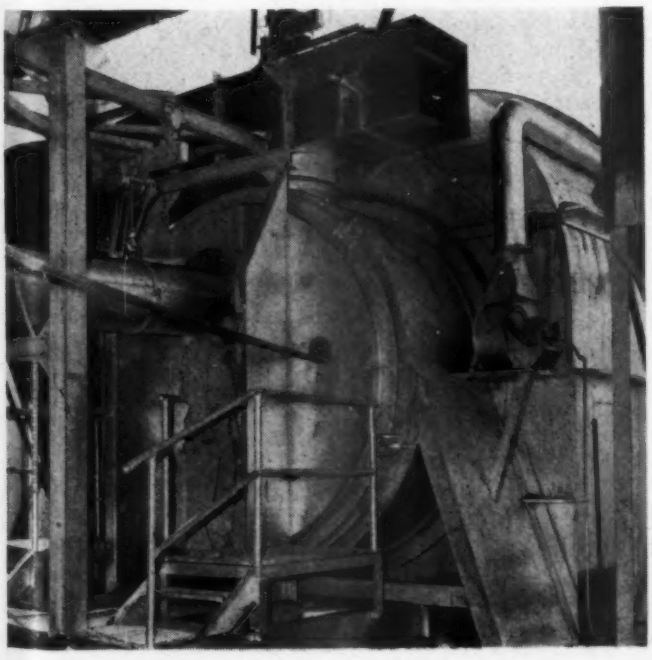
While the trend in favor of bulk shipments, as against the sacked product, has been generally observed within the portland cement industry in the far West of late, the reverse has been true, percentage-wise, at Permanente. This is, of course, accounted for when one remembers that the plant's production six to eight years ago was largely used in constructing Shasta Dam and moved in bulk. Too, the enormous tonnages shipped into the Pacific theatre of war also went in bulk carriers. Today, with the plant looking to private building as the chief outlet for its product, a much greater proportion is being packed in paper. The following table shows the percentages shipped in bulk and bags from Permanente by years:

Year	Percent of Shipments In Bags	In Bulk
1940	41	59
1941	29	71
1942	26	74
1943	24	76
1944	32	68
1945	49	51
1946	53	47
1947	55	45

This has necessitated an expansion of packhouse facilities at the plant, including a 3-story 50- by 100-ft. addition to the structure itself, the installation of a fifth 4-tube St. Regis packer, the revamping of the Fuller-Kinyon conveying and pumping system, and the erection of a 5,000 bbl., 4-compartment steel storage bin adjoining the new packhouse addition. This bin is used both to load out bulk trucks and to feed the new packer inside the building via screw conveyor.

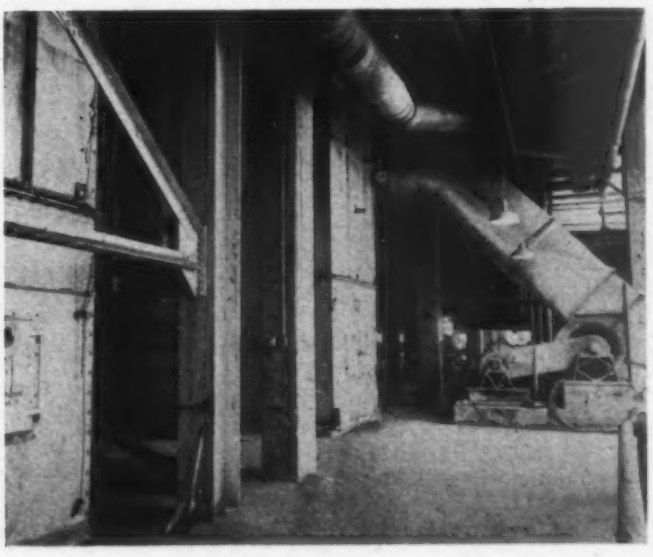
A separate department of the cement plant formerly processed com-

(*Continued on page* 119)



• Left: The new hood on one of the four 12- by 463-ft. kilns after changes had been made at the firing end to accommodate the new coolers.

• Below: A view of two of the four new air-quenching clinker coolers and one of the fans.



Depreciation and Your Income Tax—Timely Suggestions for the Producer

CONSIDERABLE confusion still exists in the minds of many taxpayers as to how to treat depreciation in their income tax returns. Not a few are still ignoring depreciation on certain depreciable assets, with the result that their taxes are greatly increased thereby. Many

By HAROLD J. ASHE

others have set up depreciation schedules which do not conform to rules of the Internal Revenue Bureau and which may eventually be challenged by bureau auditors.

One commonly held misconception is that if depreciation is not taken from the outset of acquisition of an asset, the taxpayer may not take such depreciation later. He may take depreciation in a current return, even though overlooked in past returns, but only for the current year. The depreciation, contrary to another misconception, does not start as of the date he first takes depreciation, but starts as of the date the asset was acquired. That is, past "allowable" depreciation is gone, even though not previously taken. A third error is that taxpayers who have not previously taken depreciation, even though allowable, ignore "date of acquisition" and "cost or other basis," misconstruing "other basis" as an invitation to value such assets at what their present new replacement value would be, a figure usually higher than the asset cost at the time of acquisition.

As relates to federal income taxes, depreciation is an allowance for exhaustion, wear and tear of property used in a trade or business, or of property held for the production of income. The purpose underlying allowance for depreciation is to permit the taxpayer to recover over the useful life of the property the capital sum invested therein. The terms "used in trade or business" or "held for the production of income" would include property held for such purposes, though actually not in use during the taxable year.

Taxpayers should not confuse fluctuation in value of an asset with depreciation. For example, a piece of equipment becomes second-hand at the moment it is first used and at least its re-sale value may drop appreciably at that instant. However, such a circumstance has no direct bearing on depreciation. Only that part of the loss in value which is due to actual exhaustion, wear and tear in business use, during the year, may be deducted as depreciation.

Nor are "obsolescence" and "depreciation" synonymous. Obsolescence is the reduction in value resulting from changes in circumstances that make it desirable or imperative that the property be replaced before it has been worn out, such as newer equipment that is faster, better or more economical than the old equipment. Annual depreciation, on the other hand, is the loss which takes place in the course of a year.

If it is clearly shown that, because of economic or other conditions, property must be abandoned at a date prior to the end of its normal useful life, so that depreciation deductions alone are insufficient to return the cost or other basis, a reasonable deduction for obsolescence may be allowed in addition to depreciation.

"Complete exhaustion" does not necessarily mean the same thing as "useful life." If a piece of equipment, for instance, has a salvage or scrap value at the end of its useful life, this value must be taken into consideration in determining the depreciation rate.

A further requirement in determining depreciation is that the property must have a limited and determinable useful life in the trade or business. Land, for instance, upon which a building is erected, is not depreciable since it has no determinable life, and in setting up depreciation on real estate, the cost or other basis for the land must be segregated from the cost or other basis for the buildings. Thus, a building and land might represent an original cost at the time of acquisition of $20,000. If, however, a fair value for the land at the time of acquisition was $5,000, then the building's value at the time of acquisition would be $15,000, and the depreciation schedule would be based on the $15,000 figure.

The length of useful life of a property is often difficult to determine. It depends upon particular circumstances, including the character of the property and its use. A well-built brick building may have a useful life of 50 years, and a frame building 25 years, a piece of machinery 5 or 10 years, a truck 3 to 5 or even 8 years, but in a particular business the useful life may vary considerably.

Alterations made by the taxpayer to business quarters which he rents for his business use may be depreciated over the period his lease has to run from the time such alterations were made.

Cars used partly in business and partly for private use may be depreciated, with that part of such depreciation chargeable to business use deductible, the personal part not being deductible, either as a business expense or as a personal deduction.

In depreciation deductions, the amount claimed must be supported by data called for in depreciation schedules. Taxpayers may not safely, as many now do, show only the amount of depreciation being taken without indicating how they arrive at such annual depreciation. This information must include: (a) the kind of property being depreciated, (b) the date acquired, (c) the cost or other basis used in computing depreciation, (d) the depreciated value at the end of the year, (e) the depreciation allowed or allowable in prior years (even though not taken) and (f) the remaining cost or other basis to be recovered, as well as (g) the estimated life used in accumulating depreciation, and (h) the estimated remaining life at the beginning of the tax year being reported.

Any recognized method of accounting practice may be used in computing depreciation, provided that the method is used consistently. Once the method is elected, it may not be changed except with the permission of the Commissioner of Internal Revenue.

J. A. Jacks & Sons, a firm composed of a father and five sons, formerly located at Arlington, Washington, recently moved into a new plant at Seattle, where agricultural limestone will be produced. Their product is known as Imperial Limestone Flour.

NEW USES FOR VERMICULITE IN AGRICULTURE

By WALTER E. TRAUFFER

another ON THE SPOT report

VERMICULITE is a comparatively new nonmetallic mineral which, nevertheless, has become so well known for its insulating qualities and applications that it has become "typed". Most of the vermiculite produced is still sold as a loose-fill mineral insulation but many other uses have been developed in recent years, some of which may eventually be even more important. The multitude of the applications now being worked on and the almost unlimited future possibilities for this material were thoroughly impressed on the writer a few months ago when he had the pleasure of making a tour through the offices, laboratory and plant of the Alexite Engineering Co., Colorado Springs, Colorado, personally escorted by J. Don Alexander, president of that company and the parent Alexander Film Co., the world's largest makers of advertising films. The Alexite firm is one of the largest and certainly one of the most progressive companies in this field and its products should give a good picture of the development in this industry.

The company's largest ore deposit at present is near Encampment, Wyoming, a large rocky hill, called Mt. Alexite, rising from the middle of Encampment Valley. Other deposits are near Canon City and Gunnison, Colorado. The vermiculite is expanded in a gas-fired vertical furnace (See PIT AND QUARRY, June, 1946, p. 87) after first being dried and sized. The use of air float tables removes rocks from the finished material and makes it possible to control its weight. The finished product weighs from 6 to 10 lb. per cu. ft. and is durable, sterile and fireproof.

Tomato Plant At Left Growing From Seed In Garden Soil
Tomato Plant At Right Growing From Seed In Soil Treated With AleXite SPROUTO. Root Area Is Six Times As Large As That Of Plant At Left.

• The plant at the left has been growing in ordinary garden soil; the one on the right, having a root area six times as great as that of the first plant, grew in soil treated with a vermiculite product.

Little need be said about the application of vermiculite as a loose filler as this is well known to everyone. Less is known about its use as a mineral aggregate in place of sand in plaster and insulating concrete. Weighing only one-tenth as much as natural sand, plaster made with it has four times the insulating value. This means a saving of nearly a ton of dead weight in an average room, not an unimportant factor in this era of labor coddling.

Vermiculite plaster has been given a 4-hour fire rating by the Underwriters Laboratory, the highest rating given to any wall finish. It also has excellent acoustical qualities and will deaden sound within a room as well as prevent it from passing through the walls. Its flexibility is another feature, as it has a high resistance to cracking. Nails may be driven into walls plastered with vermiculite and they may be drilled or sawed without fear of cracking.

From the builder's standpoint vermiculite is light, mixes easily,

(*Continued on page* 119)

• Left: In the container at the left water remains evenly distributed throughout the soil conditioner; in the container at the right, the water separates from the common earth.

• Below: The larger squashes grew in soil containing vermiculite plant food; the others in ordinary soil.

THE CARE AND MAINTENANCE OF CHAIN DRIVES*

THE life of chain drives depends on adequate lubrication and correct alignment. The suggestions and recommendations following are presented with the view of increasing that life span.

Lubrication of Slow and Medium Speed Drives

Many slow speed drives operate under dusty and dirty conditions. As a rule, they are not enclosed. Thus, adequate lubrication is difficult. Heavy oil applied to outside of chain seldom reaches working parts and only catches dirt and grit.

For best results, periodical cleaning by removing the chain and washing it in kerosene is recommended. After cleaning, soak the chain in a light oil to restore the lubricating film. SAE 30 oil should be used. Then remove excess oil by hanging the chains up to drain. Sprockets of course, should also be cleaned.

For drives running at medium speeds, continuous lubrication is a "must". Drives operating under dusty or dirty conditions should be completely enclosed. In clean locations, a channel surrounding the drive is ample.

Drip sight-feed oilers have proved adequate for lubricating medium-speed drives. The drops of oil should be directed to the inside of the chain between the side plates as it is entering the drive sprocket. In this way the oil will work into the pins and bushings. Do not allow oil to build up in the case. Drain it off periodically. Use SAE 20 or 30 oil.

High Speed Drive Lubrication

Chains operating at high speeds should use SAE 10 or 20 oil at room temperature, and should be completely enclosed in an oil-tight case. It is important that the proper oil level be maintained. The lower strand of the chain should just dip into the oil when the chain is running. Excess oil will cause churning and heating. Every few months the quality of the oil should be checked, and dirty oil replaced.

For extremely high speed drives, SAE 10 oil at room temperature, or SAE 20 oil above room temperature is recommended. Chains running at these speeds require a force feed circulating pump system for proper lubrication. Often an external oil cooler is required if the drive is operating in a very warm location.

Chain Slack and Alignment

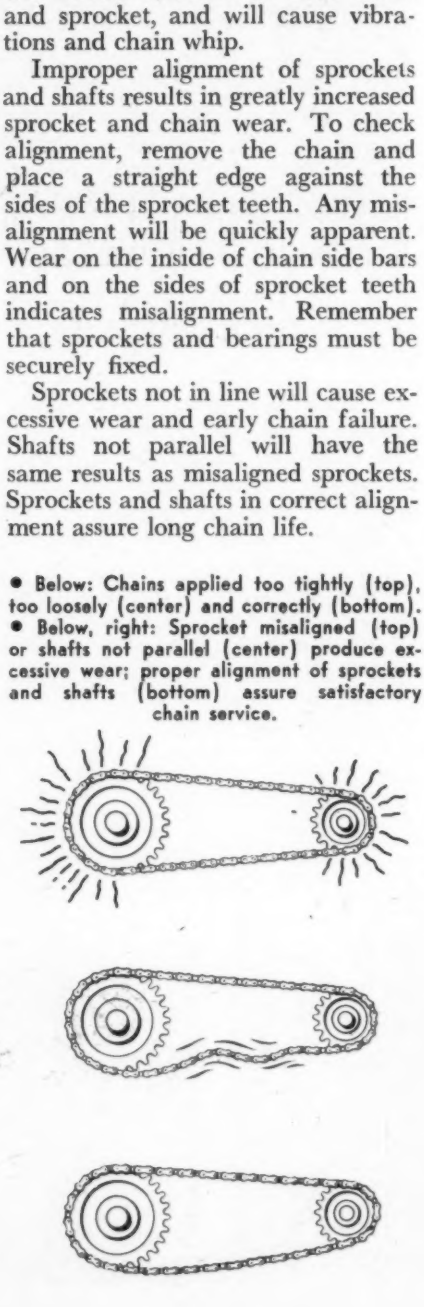
The correct amount of slack is essential to the proper operation of chain belts. Unlike other belts, chain belts should not be tight around the sprocket.

When chains are tight the working parts carry a much heavier load than is necessary and work much harder than properly installed chains. Too much slack is also harmful. On long centers particularly, too much slack will reduce the life of both chain and sprocket, and will cause vibrations and chain whip.

Improper alignment of sprockets and shafts results in greatly increased sprocket and chain wear. To check alignment, remove the chain and place a straight edge against the sides of the sprocket teeth. Any misalignment will be quickly apparent. Wear on the inside of chain side bars and on the sides of sprocket teeth indicates misalignment. Remember that sprockets and bearings must be securely fixed.

Sprockets not in line will cause excessive wear and early chain failure. Shafts not parallel will have the same results as misaligned sprockets. Sprockets and shafts in correct alignment assure long chain life.

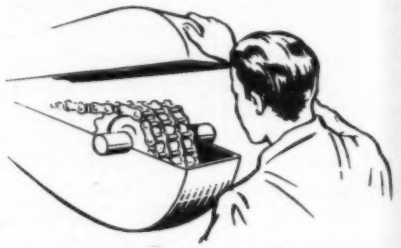
• Below: Chains applied too tightly (top), too loosely (center) and correctly (bottom). • Below, right: Sprocket misaligned (top) or shafts not parallel (center) produce excessive wear; proper alignment of sprockets and shafts (bottom) assure satisfactory chain service.



Frequent Inspection

Generally, old out-of-pitch sprockets, in a few hours' time, cause chain wear equal to years of normal operation. It is much more economical always to replace the sprockets when making a chain belt replacement.

Frequently additional life may be secured from some types of chain belts by turning them over. Remember that offset-sidebar-drive chains should generally be run so that the closed end of the link travels forward. In this direction, the joint does not flex under a full load and less wear occurs on the pins and bushings than when they are run in the opposite direction.

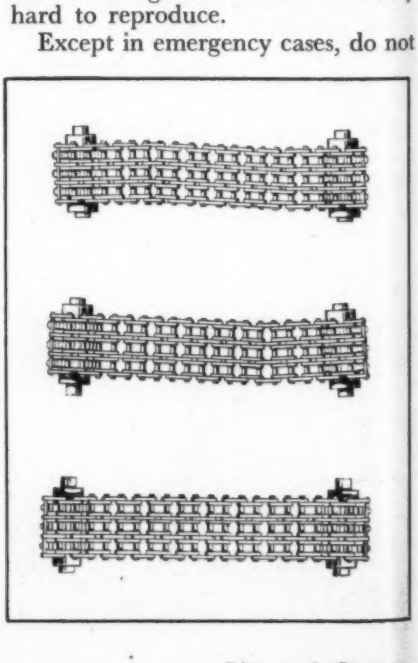


• A regular inspection schedule pays off in top efficiency performances.

Emergency Measures

Sprockets that are not too badly worn can be reversed on the shaft and the opposite surface of the tooth brought into use. Only in the event of extreme necessity should attempts be made to rebuild a worn sprocket tooth. Proper rebuilding is difficult and the original contours are very hard to reproduce.

Except in emergency cases, do not



*Prepared by a member of the Chain Belt Company's chain engineering department.

Check Chart

Symptoms	Possible Causes	Remedies
Excessive noise	Misalignment	Check alignment and correct.
	Too little or too much slack	Adjust centers for proper chain slack.
	None or improper lubrication	Lubricate—follow instructions.
	Loose casing or bearings	Draw up all bolts and brace casings if necessary.
	Chain or sprockets worn	Reverse* or renew if necessary.
Wear on chain side-bars and sides of teeth	Misalignment	Remove chain and correct alignment.
Chain climbs sprockets	Poorly fitting sprockets	Turn chain* and sprockets over and replace if necessary.
	Severe overloads	Reduce load if possible—lubricate driven machine.
Broken pins and rollers	Chain speed too high for the pitch	Use chain of shorter pitch of equivalent or greater strength.
	Shock or suddenly applied loads	Avoid shock—easy starts give long life.
Chain clings to sprockets	Incorrect or worn sprockets	Turn sprockets and chain* over and replace if necessary.
	Heavy and tacky lubricants	Clean chain and sprockets and lubricate correctly.
Chain whip	Long centers or high pulsating loads	Reduce centers when possible.
Chain gets stiff	Misalignment	Check alignment and correct.
	Improper lubrication	Remove chain, clean, and relubricate.
	Excessive overloads	Reduce load when possible.
Broken sprocket teeth	Obstruction—or foreign material in chain case	Check chain clearances. Drain and clean chain case.
Cotters come out	Vibration and centrifugal force	Turn chains over so heads of cotters are on side nearest shafts.

* Applies to cast or steel chain without rollers only.

attempt to dismantle chains or substitute new parts. Most chains are assembled on special machines and their life depends, to a great extent, on the quality of the press-fits. These fits are partially destroyed in dismantling and reassembling chains.

In joining chain belts together, avoid heavy hammer blows, as they tend to distort links and destroy alignment of working surfaces.

Avoid Underchaining

Underchaining can materially reduce the life expectancy of a chain drive. A drive which is overloaded 100 percent has about one-quarter the life of a properly-selected drive. Even small overloads can reduce drive life. Be sure that they are liberally proportioned.

If a drive requires frequent replacements, a new properly-selected drive may, in the long run, result in the least use of critical materials. Certainly it will reduce the amount of maintenance required.

Permanente Cement Co.

(*From page* 115)

mercial stone for sale as aggregates and sugar rock. This phase of the operations has been discontinued but the structures and equipment are being utilized to crush, screen and store the raw gypsum needed in cement manufacture. Formerly the company purchased by-product gypsum for this purpose but, with the acquisition of the Standard Gypsum Co. and its quarry on San Marcos Island in the Gulf of California by Kaiser interests, gypsum rock is now being shipped by water direct from San Marcos to the Permanente docks at Redwood City. The combination self-unloader S.S. *Permanente Silverbow,* a converted Victory vessel of 10,000-ton capacity, is used in this service, the vessel also supplying the needs of the Standard Gypsum plant at Long Beach. The first load of quarry-run gypsum rock was unloaded at Redwood City late in October, 1947, for trucking to the cement plant. Immediately afterward the vessel took on a load of bulk cement for delivery to Permanente's distributing and packing plant in Honolulu. The *Silverbow* is equipped with both scraper-elevator-boom conveyor equipment for handling rock and a Fuller-Kinyon system for handling cement.

New Uses for Vermiculite

(*From page* 117)

slips easily, finishes fast and sticks readily to lath or other surfaces.

This material is recommended for scratch and brown coats and is said to be excellent for flowed-on insulating, fireproof roof decks.

The absorbent value of vermiculite has made possible a number of applications far removed from the building field. Alexite has, for example, created a large demand for its product as a mineral urn filler for all urns and receptacles because it is "lightweight, sterile and easy to handle, smothers cigarettes and cigars, absorbs moisture without stain, has an attractive golden color, and causes no carpet or floor damage." Here again this product is displacing natural sand. This product is now being used in many of the best hotels and theaters.

Vermiculite also makes an excellent floor compound and Alexite makes one under the name of "Absorbit." It is light and loose, dries quickly and is easy to sweep up. It absorbs any kind of spillage, smothers fires, is odorless and stainless, and can be soaked with oil to make a dustless compound. Alexite also makes a "Super-Absorbit" which has unusually-high absorbent qualities.

The same qualities of vermiculite have also been responsible for its growing use as a poultry litter for use in brooders, coops or hutches. Its use keeps floors warm and dry and its absorbent, insulating and fireproof qualities are important. While on the subject of fire we must not forget Alexite "Blazout", a dry-powder fire extinguisher which does not deteriorate with age and is harmless to man and materials.

There are also a number of other types of products made from vermiculite, many of which space does not permit us to describe. Its use in agriculture, however, is so new, yet already so important, and its future seems so bright that something must be said about it. When used for soil conditioning it has remarkable absorptive power, thus acting as a sub-irrigation agent, taking up moisture during wet weather and releasing it to thirsty roots in dry times. In heavy clay soils it enables roots more easily to penetrate to nutrient areas, and in sandy soils it enables nutrients and moisture to be retained longer. Vermiculite is used in various soil amendments such as Alexite "Sprouto"—a sprouting and transplanting medium of a type which has aroused much interest in agricultural circles.

Vermiculite is also used in a variety of fertilizers such as Alexite "Garden-Gro" and "Hy-Power," which are organic-base fertilizers fortified with essential plant nutrients. Some remarkable results are being obtained with these when used in combination with vermiculite soil conditioner, as can be seen in the accompanying photographs. Various other western-mined fertilizers are also used in a variety of Alexite products whose names are self-descriptive. These include "Min-Vita", "Alkalex", "Nitralex", "Phosalex", "Potasalex", "Sulfalex" and "Vitalex."

Efficient Use of Compressed Air from Portable Compressors in Quarries*

PART I

COMPRESSED air is the principal form of power for most quarry operations. Stone channelers, rock drills, and plug drills all are air operated. Steam pumps are operated by compressed air in many quarries because of the ease of delivering power to the pump without great loss. Pumping is also done by the return-air system. Air hoists and lifts are important quarry aids in handling heavy stone slabs. In the smith shop, hammers, sharpening tools and other equipment are operated by compressed air.

Forerunners of the modern compressors first appeared around the time of the Civil War, although notable advances had been made before then over the wooden cylinder and piston used 4,000 years ago to produce air blasts.

The first compressor used on a large-scale project in the United States was in 1886 on the Hoosac tunnel. It was a 4-cylinder horizontal unit. Cylinders were single acting. The pistons were driven by a turbine wheel. Air was admitted through inlet valves.

This compressor later was taken to a marble quarry. Other quarries learned of its accomplishments there and compressed air rapidly became and remains the principal form of power for drilling rock in quarries and wherever else such work must be done.

The early development of compressors, in fact, was primarily for operation of rock drills on tunnel work, in quarries, mines, highways and other projects where rock drilling or paving breaking was necessary. However, new needs for compressed air were found and as the needs grew, compressor manufacturers developed equipment to meet the new requirements.

Fig. 1. A portable reciprocating compressor, less running gear.

The fact that compressors usually are found in an out-of-the-way corner, while the applications for the power a compressor produces are numerous and readily visible over wide areas, should not obscure the highly important part the compressor plays in obtaining satisfactory and economical performance from air-operated tools and devices.

A compressor is a machine for compressing air or gas from an initial intake pressure, usually at normal atmospheric conditions, to a higher discharge pressure. The compressing element may be of the reciprocating type or the rotating type.

Portable compressors are distinguished from other reciprocating compressors by their mobility, Fig. 1. The types of drive for portable compressors are commonly gasoline engines, diesel engines, fuel oil engines or electric motors (Figs. 2 and 3).

The ease with which a portable compressor may be taken from one project to another, or with which it follows the work as it progresses on one project, has added to the usefulness of this equipment. Another important feature is that it is not a "single-purpose" piece of equipment. A portable compressor can, and usually does, power a wide variety of tools and equipment and goes from one location to another where the power capacity requirements vary.

Long experience in building portable compressors to meet every condition which may be encountered in the field enables manufacturers of portable equipment to deliver rugged machines which thrive on a nomad life and perform faithfully during their long life.

The standard mountings available for portable compressors make it possible to take air power to practically any location, under practically every condition.

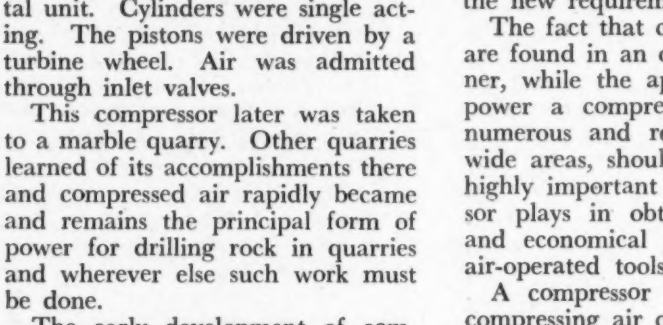
The air compressor included in the portable unit may be single or two-stage, water or air cooled, vertical or "V" type, usually of single-acting design.

Portable compressors are available in standard designs, equipped with either gasoline or fuel oil engines as prime movers. Electric motor drive can also be furnished where required.

Due to variations in designs, no

*The material in this article was compiled from "Compressed Air Handbook," recently published by the Compressed Air and Gas Institute, 90 West St., New York 6, N. Y.

• Right: Fig. 2. Portable air compressor mounted on four pneumatic-tired wheels.
• Below: Fig. 3. Two-wheeled portable air compressor.



general rule can be established concerning maximum speeds. Most manufacturers specify their speed limits in their literature and these speeds should not be exceeded in operation.

Portable compressors are most widely used to operate air-powered tools such as rock drills. Such tools are designed for operation on air pressures from 80 to 100 pounds. Accordingly, standard portable air compressors are rated for 100-lb. discharge pressure when operating at sea level, but usually are designed with some leeway as to altitude and discharge pressure requirements. The manufacturer of the unit should be consulted where it is desired to operate the unit at other than rated conditions.

Portable compressors may be used for many applications where the standard sizes or ratings do not apply. If the manufacturer is furnished with complete specifications, the design of the compressor can be modified to suit almost any required set of operating conditions within the limitations of portable design.

Sizes. For the convenience of the user, portable compressors have been grouped into model classifications as follows:

Model Number	Capacity in Cu. Ft. of Free Air Delivered per Minute at 100 lbs. Pressure at Sea Level
60	60
105	61–105
160	106–160
210	161–210
315	211–315
420	316–420
500	421–500

For sizes larger than the Model 500, no special designations have been established.

The capacity or output of a portable compressor is guaranteed on the basis of the cubic feet of free air delivered per minute at the discharge of the compressor, corrected to pressure and temperature existing at the compressor inlet. The standard method of measurement is the low-pressure orifice test conducted in accordance with the A.S.M.E. Test Code.

The overall performance of a portable compressor is expressed on the basis of the number of units of power input (gasoline, fuel oil or electric power), per unit of air output, e.g., pounds of fuel per cubic foot of air delivered or in case of electric motor drive kilowatts input per cubic foot of air delivered. Alternatively the performance of a portable compressor may be given as cubic feet of air actually delivered per gallon of fuel or, for an electric-motor-driven unit, cubic feet of air delivered per kilowatt hour.

The input measurement should be corrected to standard units as defined below:

(a) *Gasoline engine drive*
Gasoline measurements should be referred to standard U. S. gallons, weighing 6.16 lbs. per gal. and having a heat value of 20,260 B.t.u. per lb.

(b) *Diesel or fuel oil engine drive*
Oil measurements should be referred to standard U. S. gallons, weighing 7.2 lbs. per gal. and having a heat value of 19,000 B.t.u. per lb.

(c) *Electric motor drive*
Electric power input measurements should be reduced to kilowatts.

The manufacturer furnishes with each machine an operating instruction book which should be read thoroughly before the unit is started. The manufacturer's instructions should be followed closely to insure successful performance. For the benefit of the prospective purchaser, some general comments and recommendations with regard to operation and maintenance of portable compressors have been covered in the following paragraphs to emphasize their special importance.

Since pressure drop in the air transmission line between the discharge of the compressor and the tools it operates results in less work from the tools, the user should give careful attention to the selection of the size of hose or piping carrying the air from the compressor to the point of use. Frequently it is necessary to locate the portable compressor at some distance from the work and in such cases, the air is transmitted through steel pipe of sufficient size to keep the pressure drop within economical limits. If large quantities of air are required, several portables are often connected to one common air discharge line. In such cases, the use of a rigid steel pipe connection between the common discharge header and the receiver on each individual portable is exceedingly bad practice and frequently results in rupturing the receiver. A flexible connection, such as a piece of rubber hose, should be installed between the receiver and the connection to the common steel header or pipe line.

The portable should be set in a level position and at a spot where the air is clean.

Most manufacturers furnish as standard equipment with their portable compressors, in all but the smallest sizes, a hand-operated clutch, built in between the driving engine and the compressor. The primary purpose of the clutch is to reduce the torque required to start the engine. This clutch is not intended to bring the compressor up to speed gradually by allowing the clutch to slip. The clutch should always be engaged or disengaged quickly and positively.

When the portable is started by means of a hand crank, the operator should be cautioned to follow the manufacturer's instructions carefully to avoid accidents. If the portable is equipped for electric starting, the starting system is usually similar to that used with the ordinary truck engine, including a storage battery, battery-charging generator, starting motor and some means for controlling the battery-charging system. This starting equipment requires and warrants the same attention and care required by similar equipment installed in a truck. Periodic inspection and repairs and replacements when necessary will pay dividends to the user.

A portable compressor is regularly equipped with an air receiver and fuel tank and the necessary interconnecting piping. The air receiver is built to A.S.M.E. Code for Unfired Pressure Vessels. The manufacturer should be advised in advance in case an A.S.M.E. receiver does not meet the requirements of the locality where the machine is to be used. The receiver should be kept clean by draining periodically. A safety valve is furnished for protection against excessive pressures. This safety device should be checked periodically to see that it operates properly. Particular attention should be paid to keeping the fuel tank clean. The fuel tank is usually furnished with a built-in fuel strainer. This strainer should be kept clean and if accidently ruptured should be replaced immediately.

The fuel to be used in the engine of a portable compressor should be selected on the basis of quality rather than price. High "anti-knock" rating does not necessarily guarantee a good quality of gasoline. Blended gasoline using a cheap base stock is the cause of much engine trouble such as valve sticking, carbonizing, etc. Cleanliness of gasoline is important, but it is of special importance that the fuel oil used in a fuel-oil engine should be free from dirt. Filters, pumps and injection nozzles used in an oil engine are all extremely sensitive to dirt. All manufacturers of portable compressors furnish their units with necessary screens and filters to protect the engine as well as pos-

sible against the small amount of grit or other impurities which, even under ideal conditions, may occasionally get into the fuel system. Such protective devices, however, cannot be expected to protect the engine against the continuous use of dirty fuel.

For the best results, fuel oil for use in an oil engine should be distilled oil of proper gravity and Cetane number for the specific use intended. Frequently cheaper grades of fuel oil may be offered which consist of a mixture of oil stocks blended to obtain the approximate gravity specified. Such cheap oils are likely to contain dirt and other elements which will eventually cause trouble in the engine. It is to the user's best interest to purchase gasoline and fuel oil only from oil companies entirely familiar with engine requirements.

A portable compressor is equipped by the manufacturer with intake air filters for both compressor and engine, as well as oil filters for the lubricating system, to keep grit and other foreign matter away from the working parts. Under normally clean operating conditions, these filters should be cleaned once a week and oftener if operating conditions require. The filtering elements should be renewed when necessary.

The portable compressor is provided with a complete self-contained water-cooling system for the engine and also for the compressor if water cooled. Pure soft water should be used in the cooling system when obtainable. If good water is not available, radiators and cylinder jackets should be thoroughly flushed out every 300 hours, using proper chemicals where necessary.

In freezing weather, an anti-freeze compound should be used or the cooling system drained completely when the unit is shut down. The use of anti-freeze is recommended to avoid the possibility of failure to drain water from radiators and cylinder jackets when the unit is shut down and to avoid injury to radiators and cylinder blocks in case the operator neglects to refill the cooling system when restarting the unit.

Since the manufacturer must furnish a portable compressor with a cooling system adequate for mid-summer operating temperatures, it is obvious that such a cooling system will have more cooling capacity than necessary for operation in extremely cold weather. If the protective equipment furnished with the unit by the manufacturer is not adequate to maintain the proper engine-operating temperatures in cold weather, the radiator should be partially covered to raise the temperature of the cooling water to the proper operating level.

Since the portable compressor is most widely used to furnish air power for operating rock drills, pneumatic tools and other devices, designed to operate on constant pressure, the manufacturer furnishes as standard equipment a regulating system designed to hold the discharge pressure practically constant while the volume of air delivered to the tools varies with the demand. The manufacturer's instruction book contains detailed instructions for the care and maintenance of his particular design of regulating system, but one requirement common to all types of regulating devices is that the regulator must not be tampered with unnecessarily, nor by persons unfamiliar with their functioning and adjustment.

The manufacturer of the portable compressor equips it with a lubricating system designed for best results for the operating conditions involved. However, as in the case of fuel, selection of the proper lubricating oil is of paramount importance. It is recommended that lubricating oil be purchased only from reputable oil companies. The oil supplier should be furnished with complete information with regard to the requirements of the unit, usually contained in the manufacturer's instructions.

A general inspection of the entire unit should be made after every 300 hours of operation. The compressor valves should be removed, inspected and cleaned and any necessary bearing adjustments should be made. Rust spots should be cleaned and repainted and hinges and shut metal joints particularly should be inspected and, when necessary, repainted.

To tow a portable compressor at excessive speeds may result in damage to the unit and constitutes a highway menace. Moreover, since portable compressors are not provided with road brakes, light trucks should not be used for towing the larger, heavier sizes, especially on grades.

Steel wheel mountings are intended only to facilitate loading and unloading from trucks or freight cars and for moving the compressor, slowly, on the job as work progresses. Such units should not be towed considerable distances or at high speed.

The maximum recommended towing speeds for other types of wheel mountings are as follows:

Four pneumatic-tired wheels	
without springs	10-15 m.p.h.
with springs	20-30 m.p.h.
Two pneumatic-tired wheels	
with springs	25-35 m.p.h.
truck-mounted	allowable speed limit of truck

Preparation for Storage or Long Distance Shipment. A portable compressor should be stored under cover or in a closed building. When stored for long periods or preparing for shipment overseas or long distances, the entire cooling system should be drained completely. Lubricating oil should be drained from the compressor and engine crankcases, rust-inhibiting oil substituted, and the unit operated long enough to permit the rust-inhibiting oil to coat all moving parts. The oil should be sprayed into the compressor and engine intakes so that all valve parts will become fully coated. Before the unit is again put into operation, the rust-inhibiting oil should be removed from the crankcase and working parts thoroughly cleaned of slushing compounds, etc., after which the lubricating system should be filled with clean oil and the cooling system filled with clean soft water. Other instructions contained in the manufacturer's instruction book should be carefully followed before the machine is started up.

General. On many jobs, air is the chief source of power and the rate of progress of a job is greatly dependent on the reliability of the source of such air power. By its very nature, the portable compressor is designed for maximum compactness with minimum weight. It is a highly-developed and carefully-engineered piece of machinery. Proper attention to operation and maintenance will pay big dividends to the user.

(To be continued)

Production at New Plant In Asheville Hits Its Stride

Operations at the Cogdill Limestone Company's $50,000 plant near Asheville, North Carolina, which opened in September, 1947, now are running at near capacity. Products include crushed stone ranging from dust to ¼-inch size.

C. M. Cogdill, who was formerly associated with the Fletcher Limestone Company of Fletcher, North Carolina, is the owner, and John Q. Justice is plant foreman.

New York Trap Rock Corp. Installs Modern Haulage System at New Port Washington Plant

another ON THE SPOT report

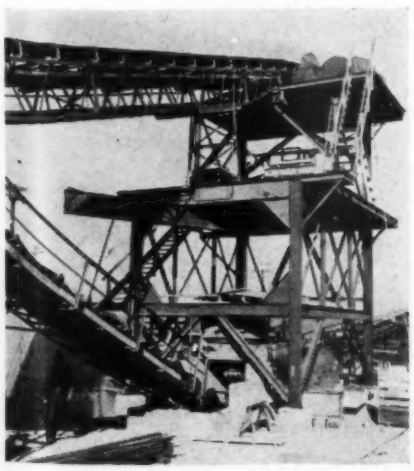
THE maxim that an aggregate-producing operation is no more modern than its haulage equipment has been given new meaning by the new Port Washington, Long Island, sand and gravel plant of the New York Trap Rock Corp.

By ROBERT W. SPAKE

Under the able guidance and directing hand of Stirling Tomkins, president, and of Wilson P. Foss III, vice-president of the New York Trap Rock Corp., this new plant is nearing completion. An inspired arrangement of equipment will permit all hauling of material, from working face to delivery point, to be done by belt conveyors, a highly-economical form of transportation, and one made even more logical by the peculiar conformation of the land in this location. The plant is laid out in a straight line from bank to loading dock, with three cantilevered conveyors at right angles to this line.

The working face of the pit extends into a high bank of raw sand and gravel, just back from the west shore of Roslyn Harbor on Long Island Sound. Adjacent operations of other companies are said to be among the largest sand and gravel plants in the world, and the New York Trap Rock plant bids fair to join this category. A tremendous reserve of raw material is available here, and will support operations for many years to come.

A Bucyrus-Erie 120-B electric shovel is used to recover sand and gravel from the working face. The 5-cu. yd. dipper on this machine dumps into a movable field hopper, which is equipped with a 6-in. bar grizzly to shunt aside the few boulders of larger size that should not enter the crushing system. From this hopper the material is discharged onto a movable 100-ft. Barber-Greene field conveyor, one of three forming a "Z," and leading from the field hopper to a permanent concrete hopper which is part of the main plant.



• The transfer and crusher house ahead of the main plant.

• A view of the screening and washing plant of the New York Trap Rock Corporation at Port Washington, N. Y. At the left is the screening plant structure, with rotary scrubbers at next-to-the-top level, and vibrating screens behind them. The concrete structure is the hydro-separator.

As the transfer points at the turns in the "Z" are so constructed as to permit each conveyor flight in the "Z" to be swung about a wide arc, the 3-flight 36-in. conveyor system provides an extendable and contractable line of flow to the main plant. The movable field conveyor flights are free to hang on the skirts of the shovel along the working face, and when the face penetrates too deeply into the pit for the three flights to follow, a permanent belt conveyor flight will be installed between the "Z" and the permanent hopper. This process can be repeated when necessary, each additional flight adding a hundred or more feet onto the pit end of the permanent plant conveyor system.

The permanent hopper is constructed of reinforced concrete and is depressed below ground level. From the bottom of this pit a Barber-Greene 42-in. belt conveyor, carrying a Hamilton belt on troughing idlers, takes the pit-run material to a hopper at the top of the primary crusher house. This building is located roughly one-third of the way between the permanent hopper and the main, or washing plant.

Immediately after discharge from this, the No. 1 plant belt, the material is passed over a vibrating screen bearing 1¼-in. cloth. Plus 1¼-in. material is dropped to the Telsmith 6-in. gyratory crusher located at ground level, while minus 1¼-in. sand and gravel drops onto the No. 3 belt conveyor moving towards the screening building. Crusher discharge falls on the No. 2 belt conveyor, moving in the opposite direction. This conveyor in turn discharges onto the No. 1 conveyor, thus putting the gyratory in closed circuit with the crusher house screen.

The straight run from crusher house to main plant is broken midway in its length by a transfer point, where the material changes from conveyor No. 3 to No. 4. This transfer point provides for possible future installation of a dry-sand-screening plant. Conveyor No. 4 rises more sharply and discharges the (minus 1¼-in.) material, at natural moisture, into a large hopper at the top of the main structure.

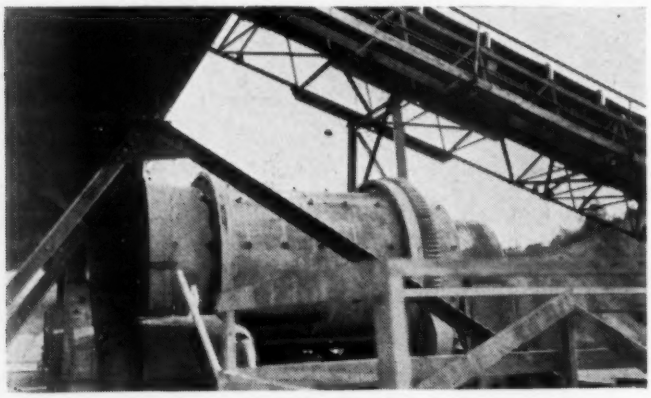
Water is added at this point to facilitate washing, handling and classifying. The water is drawn from the adjacent harbor by a 3,000-g.p.m. centrifugal pump powered by a 200-hp. motor, and is boosted to

the top of the washing plant by a second centrifugal pump with a 75-hp. motor.

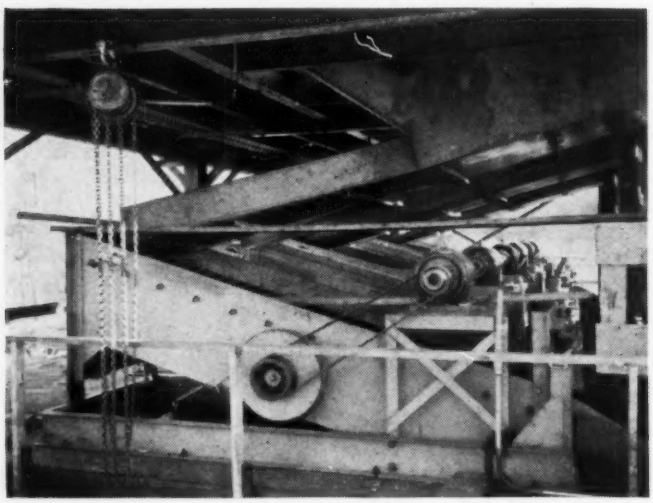
The water-sand-gravel mixture drops from the hopper onto one of three Telsmith 2-deck vibrating screens carrying ¾-in. cloth on the top deck and ¼-in. on the bottom, and driven by Deal Electric 10-hp. motors. Plus ¼-in. gravel is rejected by this screen, and is diverted into one of three Telsmith rotary scrubbers with individual Deal Electric 40-hp. motors, and Link-Belt chain drives. The high speed tumbling and cascading action of this machine disintegrates adhering clay, while some of the sand present with the gravel is washed out through perforated plates forming the barrel of the machine. Coarser sand that may still be present is flushed away through the use of a rinsing spray and a perforated cylinder at the end of the scrubber drum. The clean, washed, plus ¾-in. gravel goes from this scrubber to the No. 7 conveyor, which discharges to a stockpile over a materials-handling tunnel.

Fines passing the battery of three screens above, together with most of the wash water admitted in the top hopper, is split to a row of six Telsmith 1-deck vibrating screens located on a lower deck of the structure. These screens are each driven by 7½-hp. Deal Electric motors through V-belts. Material not passing these ⅛-in. screens is classed as grits, and falls to conveyor No. 6, which carries it to a stockpile over the same materials-handling tunnel mentioned above. Material passing the screens is sent to the bowl of

(*Continued on page* 127)

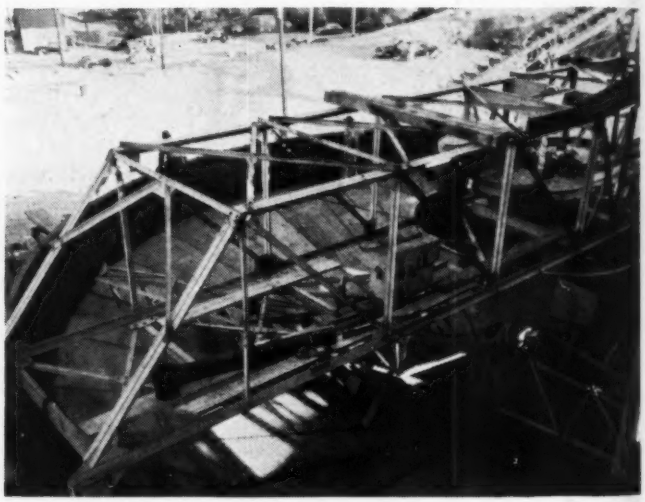


• Left: The conveyor from the transfer house discharges into a hopper which feeds this rotary scrubber, driven by a 40-hp. motor through a chain drive. The waste goes to the launder.



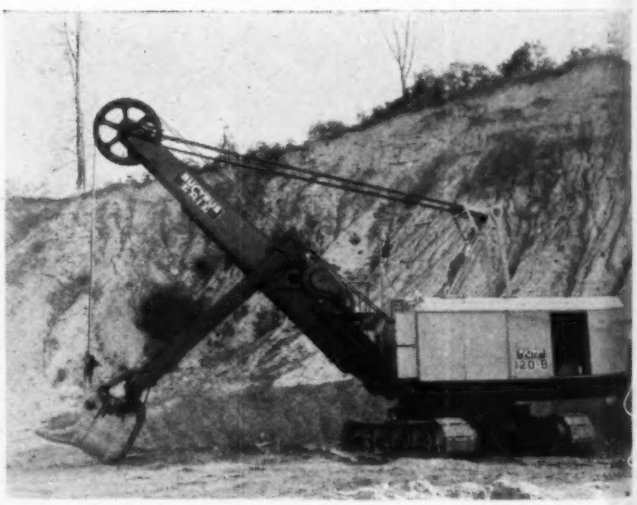
• Below, left: The battery of six vibrating screens behind the scrubbers, which are powered by 7½-hp. electric motors through V-belts.

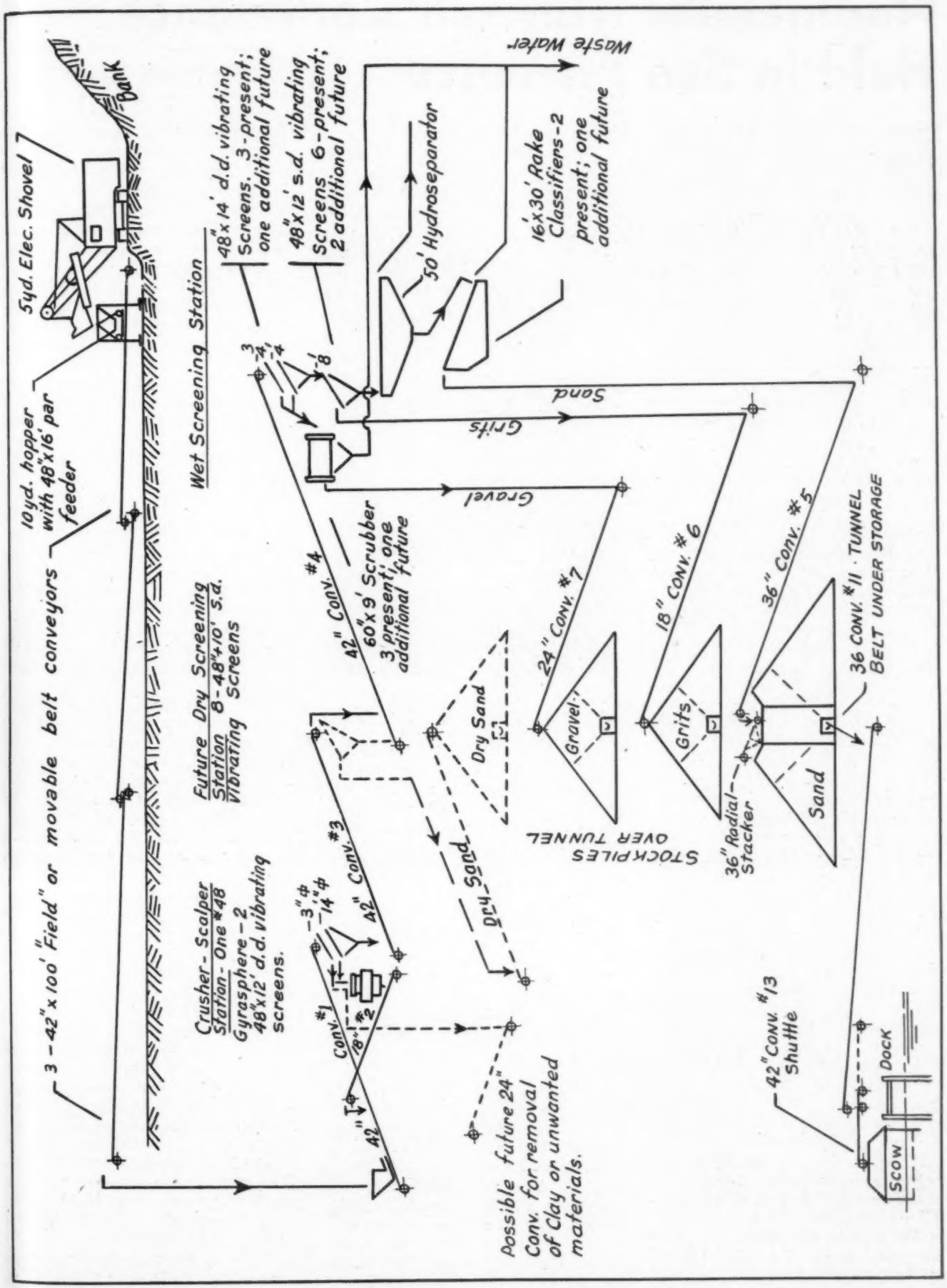
• Below, right: A view of the bowl in the hydroseparator.



• Left: A view of the stockpiling tunnel, showing several of the feed conveyors.

• Below: The electric shovel in front of the working face of the new pit.




3 - 42" x 100' "Field" or movable belt conveyors
10 yd. hopper with 48"x16' par feeder
5yd. Elec. Shovel
Bank
Crusher - Scalper Station - One #48 Gyrasphere - 2 48"x12' d.d. vibrating screens.
Future Dry Screening Station 8-48"x10' s.d. vibrating screens
Wet Screening Station
48"x14' d.d. vibrating Screens. 3-present; one additional future
48"x12' s.d. vibrating Screens 6-present; 2 additional future
50' Hydroseparator
16'x30' Rake Classifiers - 2 present; one additional future
Waste Water
Sand
Grits
Gravel
42" Conv. #4
60"x9' Scrubber 3 present; one additional future
42" Conv. #3
42" Conv. #1
Conv. #2
-3" @
-1 1/4"
Dry Sand
Dry Sand
24" Conv. #7
18" Conv. #6
36" Conv. #5
36 Conv. #11 - TUNNEL BELT UNDER STORAGE
STOCKPILES OVER TUNNEL
Gravel
Grits
Sand
36" Radial Stacker
42" Conv. #13 Shuttle
Dock
Scow
Possible future 24" Conv. for removal of Clay or unwanted materials.

• Flow sheet of New York Trap Rock Corporation's new sand and gravel plant at Port Washington, Long Island, showing material movement from the pit face to the finished-product stock piles.

Nonmetallic Minerals Conference Held in San Francisco

By HARRY F. UTLEY

another ON THE SPOT report

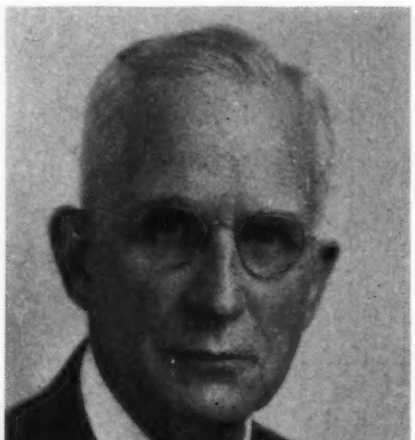
A NONMETALLIC minerals technical conference was one of the highlights of the Pacific Chemical Exposition, held during the week of October 21-25, 1947, in the Civic Auditorium in San Francisco. The conference, participated in jointly by the Mining Committee of the San Francisco Chamber of Commerce and the Industrial Minerals Division of the San Francisco Section of the A.I.M.E., took place on October 23, morning and afternoon sessions being held in the auditorium with a luncheon at noon at the Whitcomb Hotel.

Co-chairmen at the sessions included W. W. Mein Jr., vice-president of the Calaveras Cement Co., and R. E. Tremoureux, U. S. Lime Products Corp.

An informative paper describing the occurrence of the major gravel deposits in California in their relation to industry was presented by Leon D. Collins, an engineer with Pacific Coast Aggregates, Inc. Generally speaking, he said, the California deposits occur as beds of both ancient and modern river channels and are divided geologically into three groups: (1) the Granitic Basement, (2) the San Franciscan Series, and (3) the post-Jurassic Sedimentary Blanket. The Granitic Basement, explained Mr. Collins, lies at the surface and extends over the Coast Range axis, most of the Peninsular Range, the Mojave Desert, the Sierra Nevadas, Klamath Mountains and neighboring lands. The San Franciscan covers, in general, the California coastline and extends southward along the San Andreas fault, being distinguished by an extremely complex structure, folds, and many reverse faults. The Jurassic represents the last stage of the Great Basin area and involves the Salinas Valley and numerous other sedimentary deposits resulting from the advance and recession of ancient seas and subsequent erosions.

While California already is the largest producing state in both tonnage and value of sand and gravel, and has been for several years, Mr. Collins believes the future prospects are even more favorable. Good gravel deposits will continue to contribute their part in building the state, with the supply close to the centers of expansion, of high quality and apparently inexhaustible.

In describing some of the limestone outcrops of California, C. A. Logan, district engineer of the California Division of Mines, made



Lewis A. Parsons
Technical Consultant
Calaveras Cement Co.

some interesting references to the early development of the lime and cement industries in the state. Contra Costa County claims the first commercial lime kiln was started within its confines in 1851, but ruins of many old stone pot kilns are to be found in the vicinity of limestone deposits up and down the slopes of the Sierra Nevadas which are believed to be of earlier origin. Hydraulic limestone, found in Solano County in 1860, was used to produce hydraulic cement which had its chief market in San Francisco, consumption reaching a peak of 100,000 bbl. in 1865 and selling for $2.50 per bbl. The first serious attempt to make portland cement began in 1889 in San Diego County, but failed because the cost of transporting it 22 miles to San Diego was too high to compete with cement brought in by English sailing vessels. The first commercially successful plant was that of the California Portland Cement Co. at Colton, 50 miles east of Los Angeles, in 1894. The company is still in production at that location. By 1903, annual output in California reached 641,000 bbl. and by 1946 it had risen to 19,546,336 bbl.

Further light on the subject of limestone was developed in a paper by L. A. Parsons of the Calaveras Cement Co., who described the exploratory work in his company's No. 4 quarry near the plant at San Andreas. This quarry has been in production for ten years and recently it became necessary to discover an extension of the known tonnage or look for stone requirements at one of its other deposits. Since the latter would have entailed heavy development expense, it was decided first to undertake an extensive program of diamond drilling at Quarry No. 4. Holes were drilled vertically at the corners of coordinate squares, drilling being contracted to the Mitchell Diamond Drilling Co., with Mitchell Besich, Calaveras quarry engineer, in direct charge of the core and responsible for it. The drill was operated two shifts, 6 days a week for the most part. Progress averaged about 1,000 ft. per month, with a high of 1,284 ft. in one month.

As a result, about 20,000,000 tons of exceptionally pure limestone was outlined. Many cores average 98 percent $CaCO_3$ or better for hundreds of feet. The limestone lens was found to be tilted at an angle of about 33 deg., apparently by a large granodiorite intrusion resulting in a fault separating the stone into two zones. The larger mass is a dense crystalline limestone of high purity; the smaller is broken and intruded by schists and consequently lower in $CaCO_3$.

The utilization of nonmetallic minerals in the insecticide industry was told by Louis R. Moretti, head of the Industrial Minerals & Chemical Co., the finely-ground mineral being used as the carrier, or diluent, for the poisons with present production for use alone approximating 30,000 tons annually in California. Practically all of this is produced on the West Coast, Mr. Moretti said. The diluents, for the most part, include clays, talcs, diatomite, pumicite, tripolite, lime, limestone, and gypsum.

Used by agriculturists, the dusts range from 35 to 45 lb. per cu. ft. where used for ground dusting and the particles must be fine enough to spread evenly over the crops. For

airplane dusting, now very much in vogue in the West, the mineral must weigh about 60 lb. per cu. ft., the heavier weight being necessary to assure prompt settling in the turbulent air set up by this method of distribution. Generally, a mineral dust with 90 to 99 percent passing a 325-mesh screen, air classified, is satisfactory, Mr. Moretti reported. Abrasive materials are frowned upon, as they often create rapid wear in dusting equipment.

California sands for the glass and foundry trades were the subject of a paper by P. C. Valentine, sales manager of the Del Monte Properties Co., San Francisco. Two deposits now producing silica sand for the glass industry are at Corona (Owens-Illinois Glass Co.), and Monterey (Del Monte Properties Co. and Owens-Illinois). The Corona sand is a quartz-feldspar-mica-clay mixture which, after preparation, runs about 93 percent SiO_2. Iron content is about 0.10 percent. The Monterey beach sands after processing run about 82 percent SiO_2 with an Fe_2O_3 analysis of about 0.05 percent. At one time there were glass-sand operations at Pittsburg and Brentwood, California, but these have been abandoned because of the high cost of mining and preparing the sand to reduce its iron content. For many years considerable prospecting has been carried on to discover a high-silica sand in California, but without success, Mr. Valentine revealed. There is a wide variety of foundry sand deposits being worked in central and southern California. About 20 of these produce natural-bond molding sand; seven are known to be in production on clay-free, or core, sands. The majority of the foundry sand units are small-scale operations which operate intermittently.

Pumice and perlite in California was the subject of an exhaustive but interesting paper by C. R. King, associate metallurgical engineer, California Division of Mines. He described the genesis of these minerals, both being acidic volcanic glasses, traced their industrial uses since the time of the Romans, and described in considerable detail the occurrence of the deposits in California which is on a wide scale throughout the state. Mining methods, the preparation of pumice by crushing and screening, and the processing of perlite by expanding with heat in special furnaces were described.

Regarding perlite, Mr. King said the present selling price of the expanded, processed material varies from 15 to 50 cents per cu. ft. There is no established price structure and most purchases have been made, he declared, for experimental or small-volume uses. The largest volume of perlite sales has been as an aggregate for hardwall plaster in the San Francisco Bay area and as aggregate for concrete building units as well as for plaster in and around Los Angeles.

"Since no real volume of production has yet been attained, competition is not as yet a factor in selling prices of perlite," Mr. King reported. If volume production is attained, the selling price is expected to stabilize at some figure well below present levels, in his opinion.

Other papers presented at the conference included a discussion of California talc deposits of steatite grade by Ben M. Page, of the Stanford University School of Mineral Sciences, California refractory clays by W. F. Dietrich, owner of the Campo del Mar Pottery, a report on the California salt industry by Douglas S. See, chief chemist, Leslie Salt Co., and a review of recent developments in minerals and raw materials in the Pacific Northwest by Richard J. Anderson, Raw Materials Survey, Inc., Portland, Ore.

New York Trap Rock Corp.

(*From page* 124)

a Dorr hydroseparator.

The hydroseparator is in effect an inverted cone, equipped with large rakes rotating on a central axis. These rakes agitate the water, which is continually overflowing the top edge of the bowl, and keep the fine material in suspension. Sand is gradually drawn down to the center of the bowl, the point of the cone, and is discharged into two Dorr sand rakes. Clay and other extremely fine and undesirable materials overflow with the water into the launder, which is actually a circumferential trough around the top edge of the bowl. From here, this material and its suspending water are sent to a settling pond as waste. Wash water from the rotary scrubbers, with the undesirable fines that have adhered to the gravel, is sluiced into the same launder and wasted.

The sand rake dewaters the material to be classed as sand by using slowly-moving paddles to pull the solids out of the water, up an incline, and onto the No. 5 stockpiling conveyor. This discharges either into an open-sided silo or onto a radial stacker conveyor (No. 8) above the silo, thus increasing the sand-storage capacity. Excess water from the sand rake goes to the waste pond with launder water.

Conveyors Nos. 9 and 10 were omitted in the erected plant, and will be added later when a larger range of sizes justifies their installation.

There are numerous hopper gates in the reinforced-concrete slab forming the top of the materials tunnel. These permit the aggregates stockpiled above to flow by gravity onto conveyor No. 11, which is located in the tunnel. One material, or a blend of several, can be produced by selective opening of gates. Conveyor 11 takes material out of the tunnel to a transfer point just short of the main highway which runs between the plant and the harbor. At the transfer point the flow level drops several feet to permit conveyor No. 12, leading from this point to the water front, to pass beneath the highway.

At the water's edge conveyor No. 12 rises sharply, and at the end of the company pier it is 30 feet above the level of the dock. This conveyor flight ends here, and the aggregates are transferred into a hopper and then to a reversible cross conveyor, No. 13, which is capable of loading barges on either side of the dock.

The plant is designed for a capacity of 4,000 cu. yd. per 8-hr. day and has been constructed to permit the later installation of additional screens and a third rake to increase this capacity by one-third.

Thomas Lynch is to be superintendent of this new plant, which will be operated as an integral part of the New York Trap Rock Corporation's system of pits and quarries. Deliveries to customers will be made almost exclusively by barge, utilizing, as has been mentioned, the adjacent Long Island Sound.

Black White Lime Company Produces Its Own Show

At an exhibit displayed by the Black White Lime Company, Quincy, Illinois, photographs show the various processes through which the native limestone passes, as well as samples of the finished products. The firm, founded in 1860 by W. D. Meyer Sr., originally produced lime, rip rap, building stone and crushed stone. Today 14 products are turned out at the plant.

Wage negotiation between the local unit of the Cement Workers union at Laramie, Wyo., and the Monolith Portland Midwest Company at Laramie, have resulted in a 15-cents-an-hour across-the-board increase, retroactive to April 16, 1947. The company also granted an additional increase of 10 cents, retroactive from April 16 to March 6.

Scale at Dolese and Shepard Co. Weighs Cars "On the Fly"

another ON THE SPOT report

THE combination of a short track scale hooked up with a two-cycle scale recorder, which will weigh freight cars in motion at speeds up to 2½ m.p.h. has speeded up weighing operations more than 50 percent

By EDWARD BRUNENKANT

in the Dolese & Shepard Company's crushed stone plant at McCook, Illinois.

Although motion weighing has been standard operating procedure in railroad freight yards for many years, this Illinois installation is one of the first to be adopted by a plant in the nonmetallic minerals industry. With this new setup, the company is checking out 2 to 25 loaded freight cars a day without an error attributable to the human element in weighing.

Weighing of railroad cars on track scales has been a never-ending problem, due to human errors in reading the beam and to the fact that the track scales were seldom long enough to handle at a single weighing the growing number of extra-long freight cars. Officials of Dolese & Shepard estimated that in excess of one out of every ten freight cars were too long for their old 50-ft. scale. To weigh these cars it was necessary to uncouple, spot the cars twice on the scale, and take two manual beam readings; both operations were time consuming.

With a modest expenditure of money the company cut down their 50-ft. Fairbanks-Morse track scale to a single 12½-ft. live section. All the dead rails were eliminated, as the 12½-ft. weigh bridge will not permit more than two drivers of a locomotive on the scale at any one time. The changeover was completed in less than a week's time. The scale is hooked up with a Streeter-Amet two-cycle track scale recorder.

The weighing and automatic recording capacity of this installation is 125,000 lbs., which is sufficient for a 250,000-lb. gross load. As the front trucks roll onto the scale the weighing operation begins and by the time the lead wheels reach the end of the weigh rail the weighing function is completed and the weight is printed. A trip lever located near the end of the weigh rail is depressed by one of the leading wheels and actuates the printer. The second cycle weighs and records the weight of the rear end of the car in the same manner.

• The trip lever which actuates the printing mechanism of the scale.

The two weights, one for each end of the car, are printed by the Streeter-Amet recorder on a paper tape. The recorder automatically skips a space on the top before printing the weights of the next car. This blank space is used for totaling the two car weights and any other identification data which the company wants on this permanent tape record.

This installation was recently checked by the Illinois Central Railroad test car. The results were highly satisfactory.

• Left: A string of loaded freight cars passing over the scale at the Dolese & Shepard plant.

• Below, left: The scale, seen through the window, and the short platform in the foreground.

• Below, right: The scale beam with the recording and printing mechanism at the right.

So. California Industrial Minerals Div. Of A. I. M. E. Convenes

By HARRY F. UTLEY

another ON THE SPOT report

TOPICS of interest were presented at an all-day meeting of the Industrial Minerals Division, Southern California Section, American Institute of Mining and Metallurgical Engineers, at Los Angeles on October 24, 1947. The gathering, held at the Elks Club, is an annual event of the group and was held concurrently with the sessions of the Petroleum Division on the same day, both groups joining for luncheon and the annual banquet in the evening.

The fascinating subject of froth flotation in the beneficiation of various nonmetallic minerals was presented by James A. Barr Jr., chief metallurgist of Armour & Co., as one of the papers. The froth process is the one most highly developed and favored for the ticklish problems involved in the concentration of a wide variety of the nonmetallics, the speaker declared, particularly where coarse-grained and massive deposits approach depletion and finer crushing and grinding become necessary for recovery.

Until about 20 years ago industrial minerals were concentrated by simpler methods, or were not concentrated at all. But, as the high-grade deposits became more scarce, engineers and technologists awakened to the fact that their mill tailings probably carried more values in nonmetallic than the ores did in metal values, and flotation seemed to supply the answer for economical operation.

• Left to right: F. Sommer Schmidt, consulting mining engineer; Dr. Ian Campbell; Henry Mulryan, Sierra Talc Company.

Mr. Barr described the froth flotation process as the suspension of selectively-filmed material in an agitated liquid and the introduction of diffused air bubbles which attach themselves to the non-wettable organic surface film. As soon as enough bubbles attach to the particles, the apparent specific gravity of the mineral particle becomes less than the specific gravity of the suspending liquid. The particles then rise to the surface and are held in the froth zone until wiped off by rotating paddles into concentrate launders. The minerals not filmed by the organic substance continue to be water wettable and therefore pass through the agitated flotation cells to be rejected as waste gangue minerals, or trailings.

"To delve deeper into the physico-chemical phenomena of this mineral-chemical-air attachment invites only argumentative data," declared Mr. Barr. "A great amount of authoritative work has been undertaken by our research men and a great deal more will have to be done to make our theories match the capriciousness of Mother Nature. But, through our cooperative research program, we are tracing flotation reagents to find out more about them. With all our new research tools we can expect to be much better informed on the subject in the immediate future."

The fatty acids were practically the only reagents used on nonmetallic minerals during the first ten years of developments; but in the last decade new types have become commercially available. The cationic organic ammonias, which are specific collectors for the acidic min-

James A. Barr Jr., chief metallurgist, Armour and Company.

Chairman Walter B. Hester, Baroid Sales Div., National Lead Co.

erals, opened up vast new approaches to many troublesome problems and are now fast becoming our most important and versatile reagents for concentrating industrial minerals. Recent chemical developments have made available such promising reagents as the quaternary ammonium compounds, the cyclic amines, and derivatives of the petroleum by-products such as aliphatic acids and petroleum sulphonates.

While Mr. Barr cited a long list of nonmetallic minerals which have been successfully concentrated by froth flotation, he went into detail on the four or five on which marked progress has been noted. Phosphate was at the head of his list.

"Phosphate is concentrated by froth-flotation methods to both increase the recovery and increase the quality of product. Originally, all phosphate was concentrated by the fatty acids which float the phosphate mineral and leave the silica in the water medium to be rejected as tailings. Recent developments have changed the process to utilize the advantages of both the amonic and the cationic flotation reagents. As before, the phosphate is first floated away from the silica as a rough concentrate. Then the fatty reagents are removed from the phosphate and a cationic reagent is used to complete this concentration by froth-floating the remainder of the silica while this time the phosphate remains suspended in the water medium. The advantages are higher grade of concentrate and higher recovery of phosphate mineral."

In concentrating potash, Mr. Barr hailed as unique the recent use of amonic and cationic flotation chemicals to either froth float the halite (salt), or the sylvite (potash). These two water-soluble minerals are ground and suspended in natural brine and a short-chain fatty acid or soap is used to film and float the halite, while the high molecular-weight aliphatic amine salts are used to film and float the sylvite. He reported high recovery, with concentrate grades of 95 to 98 percent KCl readily obtained.

The concentration of barite is unusual, Mr. Barr said, in that it operates in the particle-size range formerly avoided. Now, the flotation feed is being ground, all through 325-mesh and is about 30 percent minus 7.5 microns. Both cationic and amonic reagents can be adapted to the separation.

Mica, easily floated, is floated with very small amounts of cationic reagents while the granular silicates are depressed. The granular silicates are then froth floated by increasing the concentration of the cationic flotation reagent and the silica totally depressed with hydrofluoric acid.

While several cement plants have already adopted the flotation method, Mr. Barr predicted its more universal acceptance in cement-plant flow-sheets as the market requirements call for more rapid adjustment of the CaO: SiO_2: Al_2O_3: Fe_2O_3 ratio, or as high-grade calcite deposits approach depletion.

Because natural aggregates are both abundant and cheap, the Pacific Coast and southern California, in particular, have not made use of lightweight aggregates to the extent they have been utilized in other sections of the country. Long-accepted lightweights such as cinders, expanded slags and shales, in the states to the East have not invaded this Western market because the cinders and slags, in particular, are not available and would be far too expensive to bring in. However, pumice has made great strides in recent years and is now far and away the accepted lightweight aggregate of California, especially since better pumice has become available. An interesting study of pumice and its possibility in this field was presented in a paper by F. Sommer Schmidt, consulting mining engineer of Los Angeles.

Pumice aggregate, to be a good lightweight, should be composed only of those classes of pumice which are of the strength, purity, and particle size to permit grading within the range specified by the A.S.T.M., Mr. Schmidt pointed out. Much of the poor pumice which formerly found its way into the southern California market is gradually being eliminated and the industry is now making rapid strides in the way of acceptance of its product.

A good pumice, said the speaker, is one in which the fragments vary in size from the finest sand to pieces 1½ in. across, with little or no interspersed clay. For economical open-pit production, deposits should be at least 10 ft. thick, with little overburden, and well located for ease of transportation and not too far from major markets. Porosity should be high, at least two-thirds of the total volume. Weight should be in the lower brackets of the 30- to 60-lb. per cu. ft. range.

The weight-to-strength ratio for pumice concrete is 30.7 against 21.4 for conventional concrete, Mr. Schmidt reported, with the pumice concrete weighing 105 lb. per cu. ft., compared with 150 lb. for conventional concrete, with a strength of 3,220 p.s.i. Insulation value of pumice concrete will vary with the quality of the pumice and the mix, the factor for typical mixes being 2.0 to 2.5 against 12 for conventional 2,500-lb. concrete. An important observation by the speaker was that little sweating, or condensation, is observed on pumice concrete on wall surfaces inside buildings.

"The modulus of elasticity of pumice concrete is 750,000 to 1,500,000 as against 3,000,000 to 4,500,000 for conventional concrete, indicating its great elasticity. It bends further without cracking. This resistance was tested by the U. S. Navy in targets which were shattered when made of conventional concrete under conditions tolerated by pumice concrete. Its acoustic properties are high and it can be sawed and nailed."

In a paper entitled *Clays, Their Mineral Composition, Identification and Uses,* F. L. Cuthbert, manager of laboratories of the Baroid Sales Division, National Lead Co., classified the various clay minerals into three main groups, (1) the kaolinites, (2) the montmorillonites, and (3) the illite group. Methods of identification have been quite well standardized and the instruments for the various tests were described by the speaker. He pointed out that the clay-mineral approach to a study of clays is valuable from the standpoint of possible industrial utilization because of the close correlation between the different clay minerals and the properties of clays. A knowledge of these compositions holds forth considerable promise of leading to new uses for this large natural resource.

The choice of proper sampling methods in evaluating industrial mineral deposits, as in metal-mining practice, presupposes a thorough knowledge on the part of the examining engineer of available development and extractive procedures, either or both of which may influence the choice of method. This was brought out as a key point in a paper, *Notes on Sampling and Evaluating Industrial Mineral Deposits,* by G. A. Schroter and J. T. Jordan of the Northern Arizona Engineering Co. The authors stressed the point that supervisory work in this regard should be vested only in a man trained and experienced in these fundamental fields. They decried the practice, too often observed among industrial-mineral operators, of an organization struggling along in its prospecting work under the guidance of persons

(*Continued on page* 132)

THE LIME PLANT OPERATOR

By WOLF G. BAUER
Consulting Engineer

NATURE, CONTROL, AND INFLUENCE OF FLAMES IN LIME BURNING

Part V Zones of Flame Formation

another P and Q exclusive

IN considering and evaluating the many calcining systems and kiln burner arrangements of past, present, and future kilns, the operator must be able to differentiate between the several heat-producing and heat-absorbing techniques. Application of heat to lime and other ores by flames may be represented by a pictorial chain equation as shown in Fig. 1.

Much depends on whether the lime or limestone charge to be heated is placed in contact with any one or all of the sections of this heat stream. It should be obvious that each section of the stream must be regulated differently, and also that each section has certain limitations and advantages which, through judicious design of kiln and burner, are reduced or applied for optimum burning results.

Irrespective of the fuel, the heat stream may be dissected as shown. It is in the manner and location of the calcining apparatus with respect to the sections of this stream, that the three burner system classifications were made in the outline of Part III of this series.

Fuel Heat Stream It should be kept in mind that this heating stream of fuel and air throughout its development may begin and end in a space of two or three feet and a time span of a fraction of a second. On the other hand, such a stream may travel through a distance of a hundred feet or more in quite a number of seconds. The ratio of heat transferred to the ore to that lost on the way and retained by the exhaust gases is a function of process equipment design and operating technique.

Actually, of course, this stream may divide into many small streams in the kiln ports and burner ducts, or in the variable shifting void space channels within the ore charge. No doubt the reader will recall how, in earlier discussions, emphasis was placed on the manner of achieving optimum heat transfer along the various sections of this stream—namely, maximum combustion space and radiation area at point of full flame development, and high gas velocities and close stone-gas contact in the zone where the stream becomes non-luminous and lower in temperature.

Wolf G. Bauer

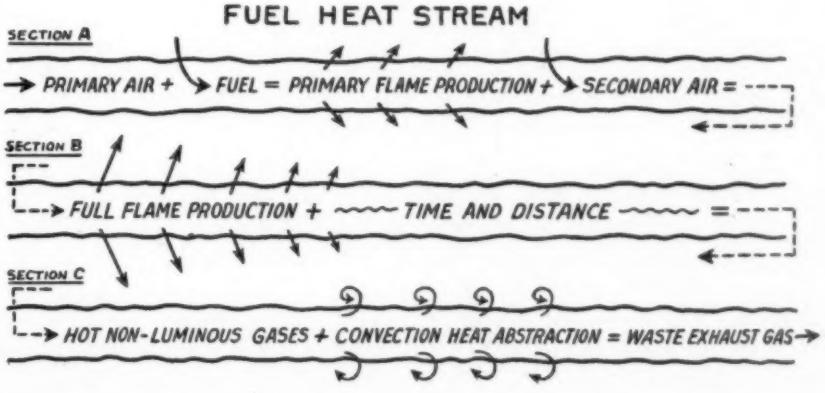
Heat Stream Convection Section In most shaft kilns and small-stone calciners, the convection section of the heat stream is well utilized, and the flame section becomes part of the convection section. The maximum rate of lime production from a single kiln must be balanced against power cost and some loss in operating control when gas velocities are held to high values. Although the operator may feel that power cost above normal practice should not become higher than the fuel cost savings achieved by using deeper stone beds and smaller sizes, additional production from the same unit often outbalances the extra cost of power in other overall savings. Relative costs of fuel and power are the chief determining factors.

Where the convection section of the heat stream does the major work, as in externally-fired kilns, heat losses in the flame development zone must be held to a minimum by insulation and combustion chamber size and shape. This requires highest grade refractories and careful burner-chamber design with some fuels like oil and pulverized coal.

Many of these factors applying to ordinary kilns have been found to be either only very modifying, or completely unrelated in lime burning testing with the "fluid kiln" developed by the writer. High flame temperatures are not necessary for high production rate when dealing with a fluidized bed of lime. Since conditions are so radically new and different with this kiln, these aspects will be treated separately in order not to confuse the reader.

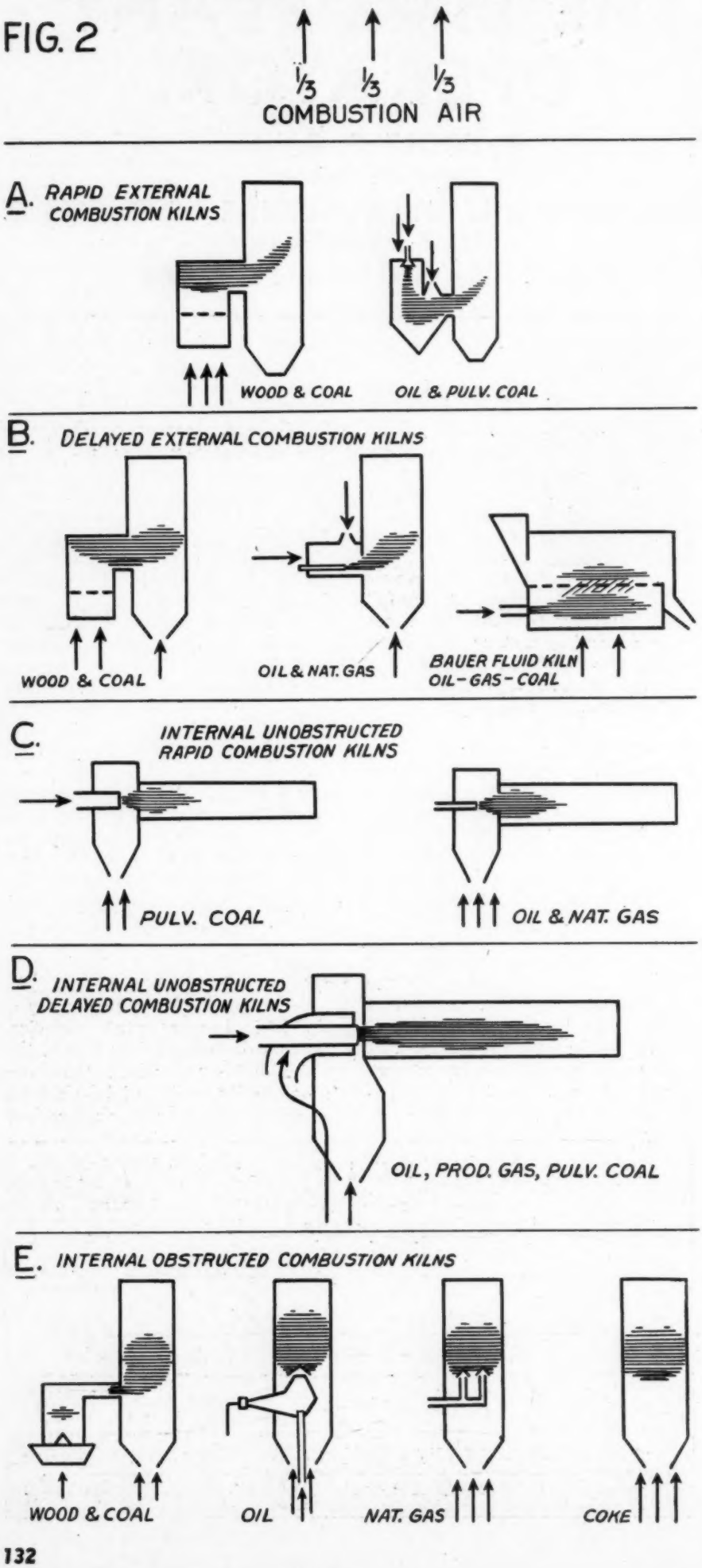
Zones of Flame Generation Fig. 2 is presented as a pictorial summary of the basic burner system classifications made in a previous part of this series. It shows where the flame zones are located, and how the air distribution varies with various fuels

FIG. 1
FUEL HEAT STREAM



LIME KILN FLAME ZONES AND AIR DISTRIBUTION

FIG. 2



as well as systems. It should be obvious that those arrangements with the least number of arrows going to the fuel burner and the most through the heat recuperator or lime cooler are thermally most efficient. Of course, there are certain fuels like natural gas or steam-atomized oil which do not require combustion air for preparation or injection, and in such cases, including mixed-feed kilns, all air is preheated. On the other hand, under optimum conditions such as found in the "fluid-kiln," two-thirds of the total combustion air is ample for extracting all heat from the hot lime, and nothing would be gained in using more air than this.

Next month's discussion will center on special firing aids with emphasis on rotary kiln burners.

(To be continued)

Industrial Minerals

(*From page* 130)

with little or no technical training in the proper and accepted methods.

Industrial Minerals and the Fertilizer Industry was the subject of a paper by Oliver E. Overseth, executive secretary and manager of the California Fertilizer Assn. He pointed out that there is opportunity for Western enterprise to develop additional supplies of fertilizer and agricultural minerals since California consumption has nearly tripled in the last six or seven years and nearly one-half is being shipped in from the East and foreign lands.

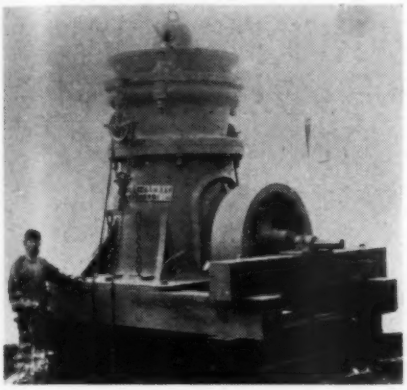
Epecially is this true of phosphates, he pointed out. Phosphorus consumption rose from 15,580 tons P_2O_5 in 1937, to 48,260 tons in 1946. With most consumers demanding concentrated superphosphate, this must be shipped in for the most part from Florida since none is produced on the West Coast. Such a plant would find a ready market in California with a big potential demand from Hawaii, the Philippines, and the Orient, in Mr. Overseth's opinion.

Chairman of the gathering was Walter B. Hester of the Baroid Sales Division, National Lead Co. Serving on the sectional committee with him were Stuart Ingram, consulting engineer; Henry Mulryan, Sierra Talc Co., E. O. Slater, Smith-Emery Co., and G. A. Schroter. Harvey S. Mudd, national director and past president of the A.I.M.E., was an honored guest.

The Lawrence Portland Cement Company, Inc., has announced the removal of its Philadelphia office on January 1, 1948, to 1616 Walnut Street.

Allis-Chalmers Begins Its Second Century of Service To American Industry

Beginning a century ago with the dawn of a great mechanical age, a remarkable 100-year record of engineering and manufacturing achievement was rounded out in 1947 by the Allis-Chalmers Manufacturing Company, now established as producer of what is probably



• A Comett crusher, made in the Fraser-Chalmers Co. shop.

the world's largest line of major industrial products.

Today in a new atomic age, Allis-Chalmers devotes a great share of its substantial industrial production to power generation, power distribution and power utilization equipment for the crushing, cement and mining industries and numbers many of these products among the more than 1600 being turned out for industry the world over.

This giant industrial producer of diversified equipment was conceived by Edward P. Allis, a native of Cazenovia, N. Y., who in 1861 acquired the 14-year-old French burr mill stone firm of Decker & Seville in Milwaukee. It was Allis who established the company policy of diverse manufacture — adding new products and services to meet the changing requirements of a wide range of industries.

Earlier operations of the Allis organization gained new benefits in the mining industry in 1901 when the Edward P. Allis Company was joined by the Fraser and Chalmers Co., the Gates Iron Works, both of Chicago, and the Dickson Mfg. Co., Scranton, Pa. Fraser and Chalmers dated back to 1849, and its line of mining machinery was extensive and known on every continent. Gates Iron Works contributed its famous Gates gyratory crusher and a line of cement-making machinery that was the basis of the present Allis-Chalmers line of equipment in that field. Dickson added coal mining machinery, blowing engines, compressors and tanks.

Gates Iron Works and Dickson Manufacturing Co., too, had started in business years before — the former was founded in 1842 and the latter in 1856 —and both made noteworthy pioneer contributions to the crushing, cement and mining fields.

Further expansion of the company's machinery lines was accomplished in 1924 with the purchase of the crushing, cement and creosoting lines of the power and mining division of the Worthington Pump and Machinery Corp., Harrison, N. J.

During the late 1920's Allis-Chalmers set a record with the design and construction of two giant gyratory crushers, each weighing 500 tons.

With the start of World War II, emergency mining and ore processing became matters of utmost urgency and crushers, screens, conveyors, grinding mills, roasters, coolers, hoists and all the wide range of allied equipment poured from Allis-Chalmers shops, as the volume of mining machinery output rose 80 percent above peacetime averages.

• A McCully crusher, popular between 1895 and 1904.

In 1945 Allis-Chalmers put into operation in Milwaukee its new crushing and grinding pilot plant—said to be the largest unit of its kind set up by any manufacturing concern in the United States. Complete facilities for both mining and milling operations are available in this 4-story test laboratory. Here special sections are designed to handle the specific problems of concentration, recovery and processing of almost every kind of industrial basic raw material.

Today more than 28,000 employees in nine Allis-Chalmers plants are meeting the needs of industry and agriculture in an atomic age with the production of electric power machinery and apparatus for production, transmission, regulation and distribution of electrical energy, processing machinery, and electrical and mechanical equipment and apparatus for general industrial applications, along with tractors, farm and road machinery.

Contemporary crushing, cement and mining operations reflect capacities and refinements never dreamed of in the days of the crude pan, cradle and rocker. Allis-Chalmers helped pioneer and originate many of these.

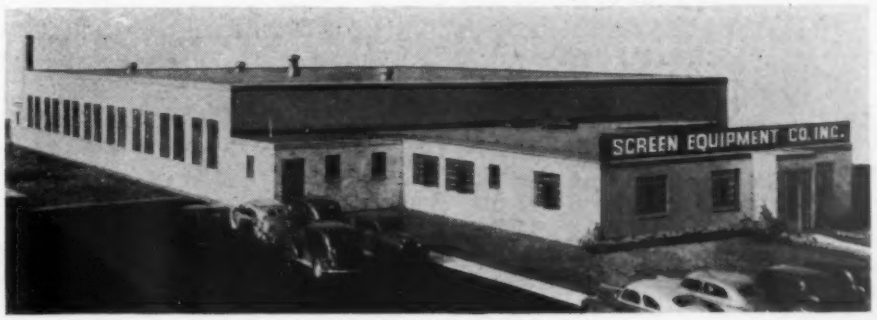
Screen Equipment Company Opens New Buffalo Plant

As a part of a $500,000 expansion program, the Screen Equipment Company, Inc., of Buffalo, New York, has placed in operation a new plant at 1750 Walden Avenue in that city. The new facilities, which contain 25,000 square feet of floorspace, will enable the firm to double its production. A considerable part of the work previously sent to other factories will now be handled in the new plant.

The announcement of the new facilities was made by C. Stuart Fielding, president and treasurer of the firm. Other officers of the business, which was founded 13 years ago by the late Alfred E. Fielding, include the following: W. Hamilton Milroy, vice-president, and A. W. Fielding, secretary.

• Left to right: N. J. Gleiser, R. S. Hunt, C. S. Fielding (president and treasurer), N. M. Hopkins and W. A. Riggs, Jr.

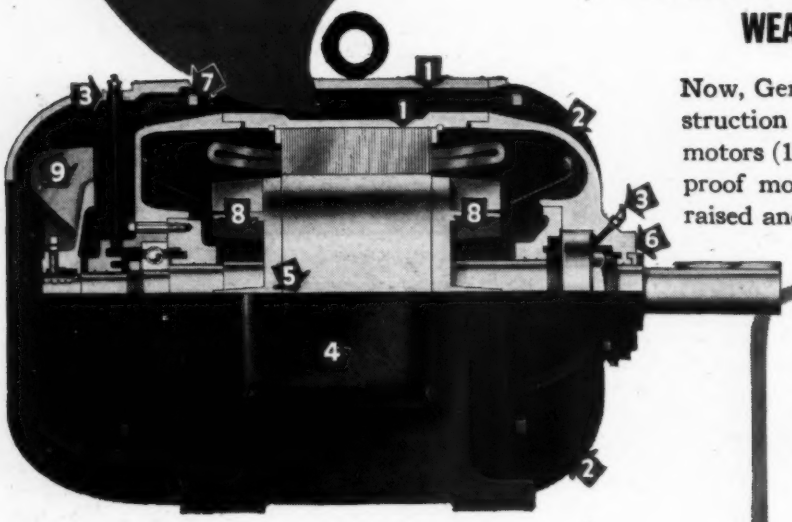
• Bottom: The newly completed plant of The Screen Equipment Company in Buffalo, N. Y.



A DOUBLE WALL *Keeps trouble out*

NEW *TRI/CLAD** TOTALLY ENCLOSED MOTOR IS MORE FULLY PROTECTED FROM DUST, DIRT, WEATHER, OR WHAT-HAVE-YOU . . .

Now, General Electric has applied Tri-Clad construction to its line of totally enclosed induction motors (1 to 1000 hp) and to most of its explosion-proof motors as well. *Extra protection* has been raised another notch.



FOR EXTRA-DUSTY AND DIRTY JOBS

Large, free-flowing air passages minimize clogging of the motor, even in the dustiest applications such as are found in cement and crushed stone plants. Smooth, unobstructed contours help keep external surfaces free of dust and dirt.

FOR EXTRA-WET LOCATIONS

Indoors or out, these Tri-Clad totally enclosed motors will withstand rain and spray without danger of shutdown. The cast-iron frame is strongly resistant to rust and corrosion.

FOR EXTRA LONG LIFE

Many motor users are making the totally enclosed motor their standard for all jobs—based on evidence of long-term savings. This new member of the Tri-Clad line makes this decision more logical than ever.

FOR ALL JOBS

. . . where extra protection, economy of operation, and dependable service under adverse conditions are prime considerations, make it totally enclosed and Tri-Clad.

THESE 9 POINTS

of new strength and serviceability put this Tri-Clad totally enclosed motor way ahead

1. A cast-iron, double-wall frame that completely encloses windings and punchings

2. Ribbed cast-iron end shields, machined to provide a tight seal, yet easily removed

3. Well proved pressure-relief greasing systems which can be packed with a long-life lubricant where advisable

4. Cast-iron conduit box diagonally split for wiring convenience (independently explosion-proof on explosion-proof motors)

5. Leads are sealed in a nonshrinking compound at the point where they emerge from frame

6. Rotating, labyrinth seal prevents infiltration of grit or liquids

7. Large, free-flowing, easy-to-clean air passages protect parts from accumulation of dust and foreign matter

8. Modern "ageless" insulation treatment includes Formex* magnet wire

9. Powerful external fan is removable, simplifying maintenance. (Nonsparking type for explosion-proof motors.)

AND IN ADDITION —compactness and short length promote ease of handling and installation.

*Trade-mark Reg. U.S. Pat. Off.

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FOR THE COMPLETE STORY

GENERAL ELECTRIC COMPANY
Section E652-7, Schenectady 5, N. Y.

Please send me GEA-4400, which describes the new Tri-Clad totally enclosed motor.

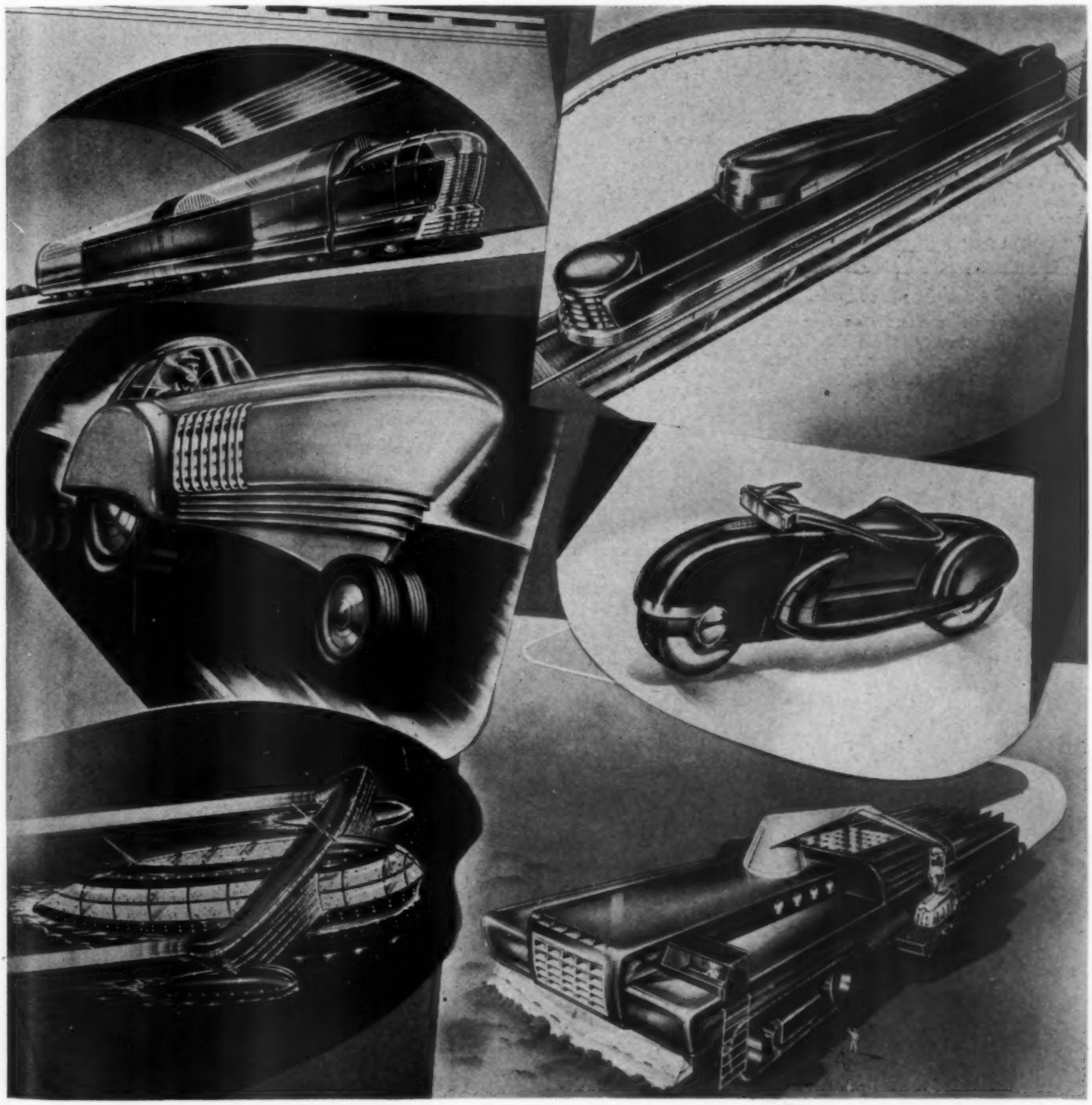
Please send me GEA-4131, "Motors and Control for Hazardous Locations."

Name.....

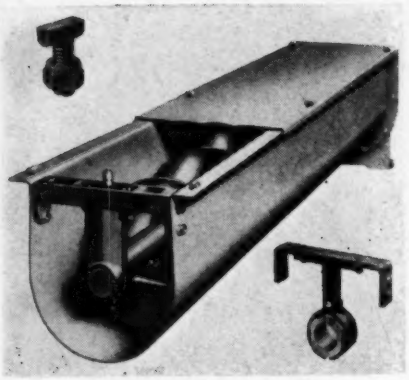
Company.....

Address.....

New Machinery And Supplies



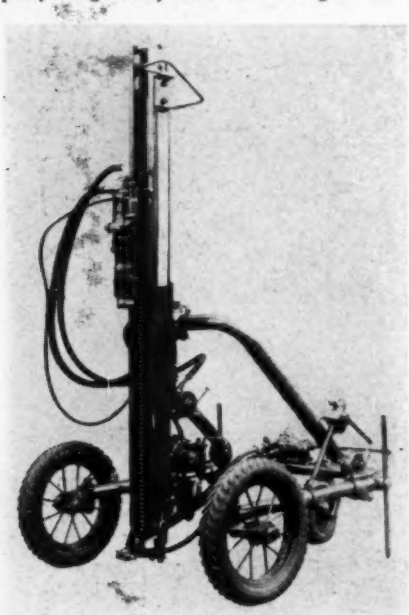
THE above examples of streamlined design (reproduced here through the courtesy of the Bohn Aluminum and Brass Co. and their advertising agency, Zimmer-Keller) are probably on the imaginative side and even impractical, but they do emphasize the trend in post-war machinery design. In the following pages of our greatly expanded New Machinery Section will be found a wide variety of the latest types of new equipment now available. Most of the items are publicized for the first time in these pages.



The Jeffrey Manufacturing Company, Columbus, O., offers this new design of cover and T-head bolt for spiral conveyors. The cover is flanged, to provide a smooth rounded edge and added rigidity, so that fewer bolts are needed. Slotted holes in the cover permit it to pass over the T-head bolts without removing them. A quarter-turn of the bolts locks the cover securely in place. In the illustration the bolts in the foreground are ready to receive the cover, while those farther back are shown locked. At the left, above, is an enlarged view of the T-head bolt clamp; below, right, is the style 26-B hanger.

● New Motor-Feed Wagon Drill

Answering the need for a wagon drill which will provide faster drilling in any kind of ground, Gardner-Denver Company announces its new "URM" Motor Feed Wagon Drill. According to company engineers, this new wagon drill



Powered by radial air motor.

assures high speed performance in any kind of ground, ranging from hard, solid formations to soft and broken ones.

The drill has a 3-wheel Universal mounting with motor feed for 6-ft. steel changes. The motor feed is operated by a powerful 5-cylinder radial air motor of Gardner-Denver design driving a chain attached to a heavy mounting slide which carries the drill. The URM carries a 3½-in. or 4-in. bore Gardner-Denver derrick drill.

The feed can be reversed instantly for effective churning. The correct feed pressure is maintained by means of a regulating valve operated by a cam on the feed control handle, and single throttle handle controls drill operations.

Faster hole-cleaning is said to be assured by the fact that drills used on the URM wagon have an air-actuated exhaust control valve operated by the drill throttle handle. This effortless blowing induces more frequent cleaning of the hole, resulting in faster drilling, elimination of stuck steels and greater overall daily footage. The exhaust control valve directs a stream of air under line pressure through the drill steel to the bottom of the hole to eject cuttings. Drill steel supports at the top of the mast assist in faster steel changing, while the centralizer or hole spotter is held in place in both open and closed positions.

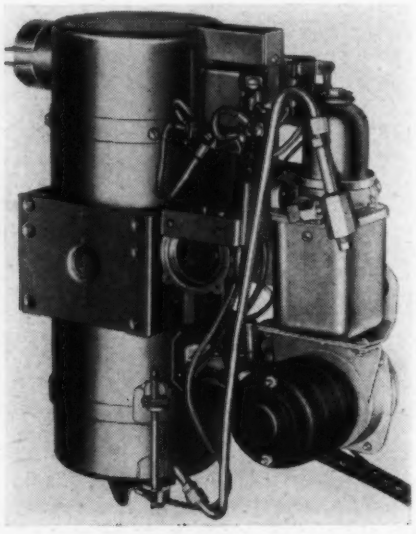
Designed for wide flexibility of use, the U-bar of the URM is adjustable from a position slightly above horizontal through an arc of 90 degrees to one practically vertical. The large wheels are adjustable to 90 degrees for line drilling.

● Engine Heater

Quick starting and continuous operation of heavy-duty power equipment in any kind of weather are facilitated by the "Superfex" all-purpose engine heater, a new development of Perfection Stove Company, Cleveland, O. This heater works by heating the engine coolant, unlike heaters which are merely radiators drawing their heat from the engine.

By utilizing the heat from exhaust gases and by adding a hot air or external liquid heat exchanger, the heat generated serves to warm the oil, battery, cab, cargo and other valuable parts of the equipment. An auxiliary heater, it operates independently of the engine.

This device was designed primarily for use with equipment which is exposed to the elements for long periods during the cold months. It can be installed on practically all types of motor power—trucks, tractors, locomotives, power plants, gasoline and diesel engines, farm equipment, road building machinery, contractors' machinery and automobiles.

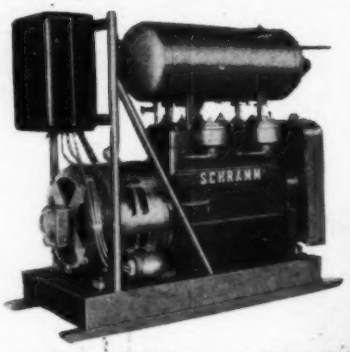


Engine heater for power equipment

The new engine heaters are furnished for either completely automatic, thermostatically-controlled operation, or for varying degrees of operator control. They come equipped with a steel heat exchanger for coolant circulation, operating with a thermosyphon head. Exhaust gases can be carried beneath the heater and further utilized for oil pan heating and similar application.

Physical dimensions of the Superfex engine heater permit mounting on automotive equipment, usually under the hood in the engine compartment; or it can be mounted on the frame in the wheel housing or between the radiator and grill.

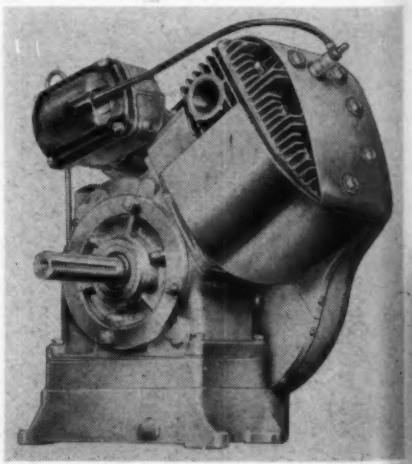
There are five models of the Superfex heater from which to choose. Basically, their principle of operation is the same, but each is designed to meet various requirements.



A product of Schramm, Inc., West Chester, Pa., is this tank, starter and cooling unit. Direct built-in, motor-driven combinations are available with air reservoir, starter and cooling unit, all mounted on a rugged steel base.

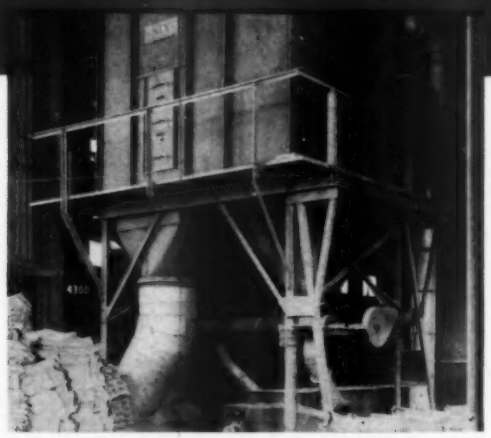
● Air-Cooled Engine

The Salsbury Model 600 single cylinder, 4-cycle air-cooled engine requires but 1⅛ cu. ft. of space, yet develops 6 hp. at 2650 r.p.m. The engine weighs 56 lbs. A major feature of this engine is the pressure lubrication system. A

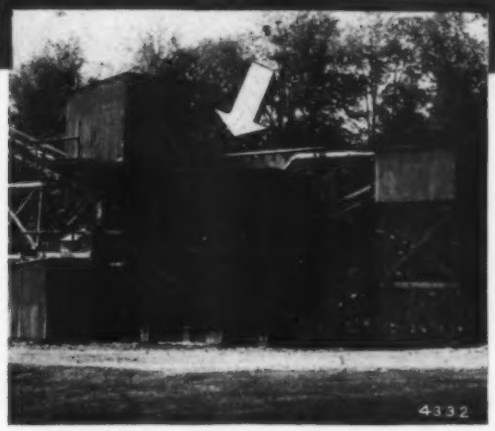


positive displacement gear type oil pump, with a pressure regulator, is mounted with the crank case and is gear-driven from the crank shaft. Salsbury Motors, Inc., 1201 Lexington, Pomona, California.

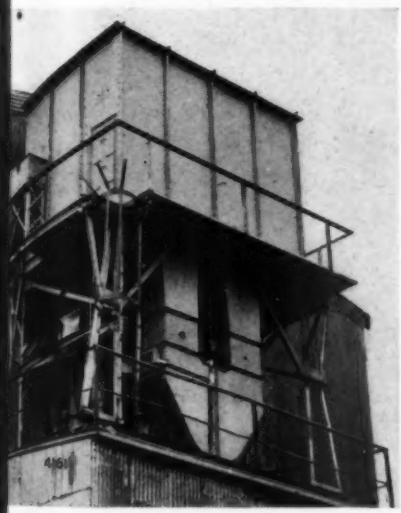
SLY PIONEERS AND LEADERS IN DUST CONTROL



Sly Dust Filter in a Cement Plant Bag House.



Sly Dust Filter in a Feldspar Quarry and Mill.



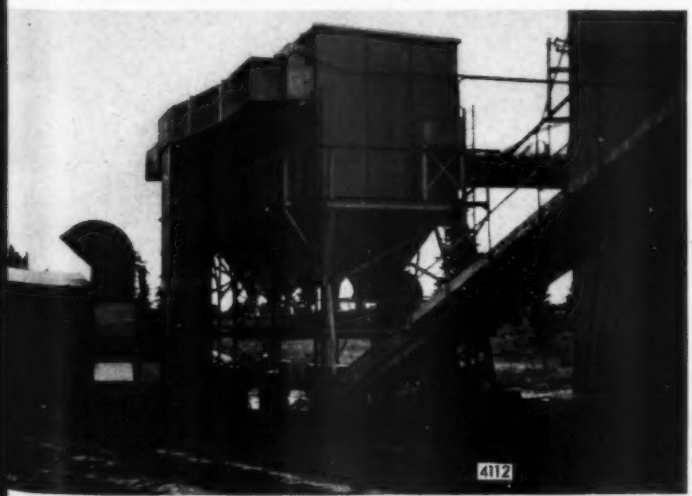
...ous Sly Dust Filter on a Cement Plant Finish Mill.

● Many years of experience and numerous operating installations **IN YOUR PARTICULAR INDUSTRY** make Sly the outstanding organization to engineer your dust problem.

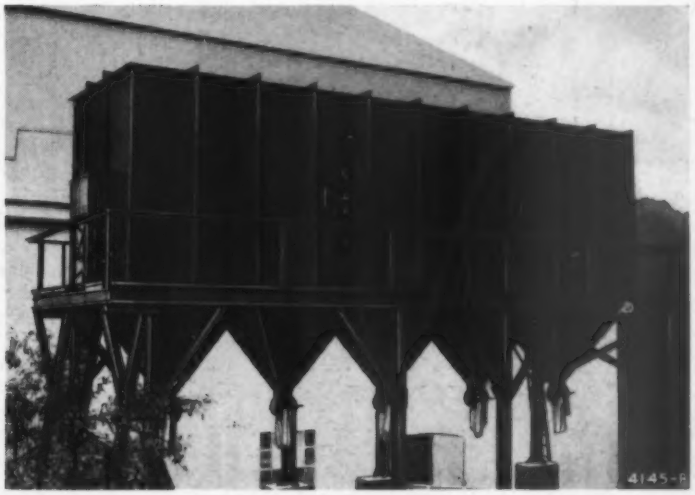
A note from you will bring you our text book bulletin or, if you wish, a Sly engineer to help lay out and specify suitable equipment.

Sly units are not expensive; they save thousands of dollars yearly in plant maintenance and improved production.

One of several Sly Dust Filters on a Cement Plant Pack House



...y Dust Filter connected with the Crushing Plant of a manufacturer of roofing granules.



Sly Dust Filter in a Rock Crushing Plant.

THE W. W. SLY MANUFACTURING CO.
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No. 2 — Ideal for general oil type lubrication, ring oiled bearings, wick feeds, sight feeds and bottle oilers.

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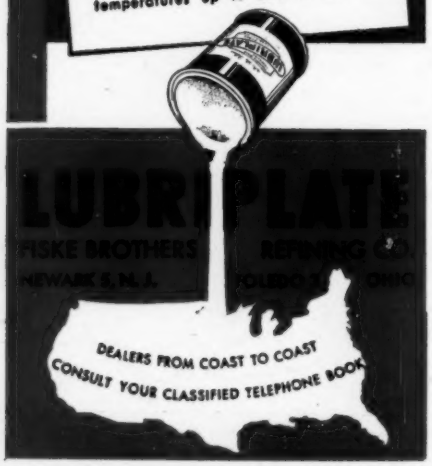
No. 107 — One of the most popular grease type products for general application by pressure gun or cups.

No. 70 — For a wide range of grease applications, especially at temperatures above 200 degrees F.

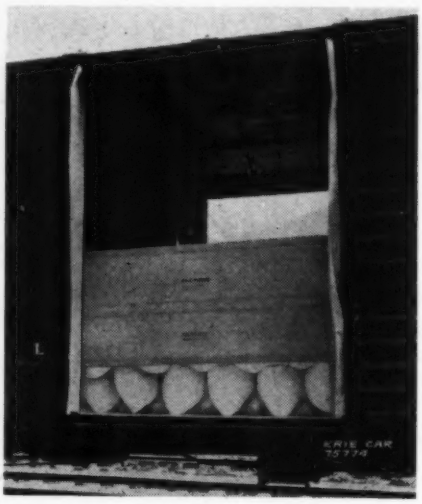
No. 130-AA — Known nationwide as the superior lubricant for open gears, heavy duty bearings, wire rope, etc.

BALL BEARING — This is the LUBRIPLATE Lubricant that has achieved wide acclaim for use in the general run of ball and roller bearings operating at speeds to 5000 RPM and temperatures up to 300 degrees F.


LUBRIPLATE
FISKE BROTHERS REFINING CO.
NEWARK 5, N. J. TOLEDO 1, OHIO
DEALERS FROM COAST TO COAST
CONSULT YOUR CLASSIFIED TELEPHONE BOOK

● Car Door Strips

A streamlined version of standard doorway blocking uses no lumber. Instead, strips of laminated, heavy-duty, water-repellent Kraft liner board, reinforced with ¾-in. by .020-in. Signode steel strapping, are nailed across the door opening inside the car. Depending upon the characteristics and weight of the load, the strips may be butted, overlapped or spaced for maximum efficiency. Light in weight, the average dunnage for a car door will range from 10 to 20 lbs. Retaining strips measure 18 in. by 84 in.



With the substitution of smooth-surfaced retaining strips for wood-constructed door bracings, damage to cartons and bags from snagging and ripping on sharp edges and corners and protruding nails disappears.

Signode also makes a complete retaining door, designed for doorway protection against seepage of bulk shipments of salt, cement, lime, gypsum, silica sand, and similar commodities. Doors are available in three sizes—3-, 4- and 6-ft. heights, each 84 in. wide. The Signode Steel Strapping Co., Chicago, Illinois.

● CO Detector

The M.S.A. carbon monoxide tester, utilizing indicator tubes developed by the National Bureau of Standards, is designed to determine the presence of deadly carbon monoxide concentrations in air, and employs the most advanced colorimetric method of CO detection.

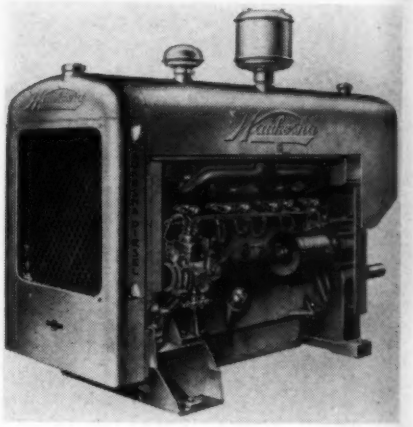
Simple in operation, and requiring no special training to use, this tester is capable of indicating the presence of carbon monoxide from 0.001 to 0.10 percent by volume in air. The nucleus of the instrument is a detector tube containing a yellow silica gel, impregnated with a complex silico-molybdate compound and catalyzed by means of palladium sulphate. In use, the sealed ends of the tube are broken in the convenient tube-breaker and the tube inserted into the instrument tube-holder. A sample of the air is aspirated through the tube by squeezing the bulb of the instrument.

If the air sample contains carbon monoxide when it is drawn through the tube, the yellow indicating chemical turns varying shades of green, directly proportional to the CO concentration; the degree of discoloration of the gel is then compared with the instrument's integral revolving color scale for quick and easy reading. Mine Safety Appliances Company, Pittsburgh 8, Pa.

● Diesel Power Plant

The Model 190-DLBU Waukesha diesel power plant is a four-cycle small six, with 3¾-in. bore, 4-in. stroke, and 265-cu. in. displacement.

Its design embodies many of the features and materials developed for war production engines now available for peace-time power plants. Such items as the hardened (550-600 Brinell) counterbalanced crankshaft; steel-backed copper-lead-babbitt, high-duty precision rod and main bearings; wet type cylinder sleeves of alloy iron, testing to Brinell hardness of 400-450; chrome-plated top piston rings to give extra life; hard alloy exhaust valve seat inserts and valves; American Bosch gear-driven, single-

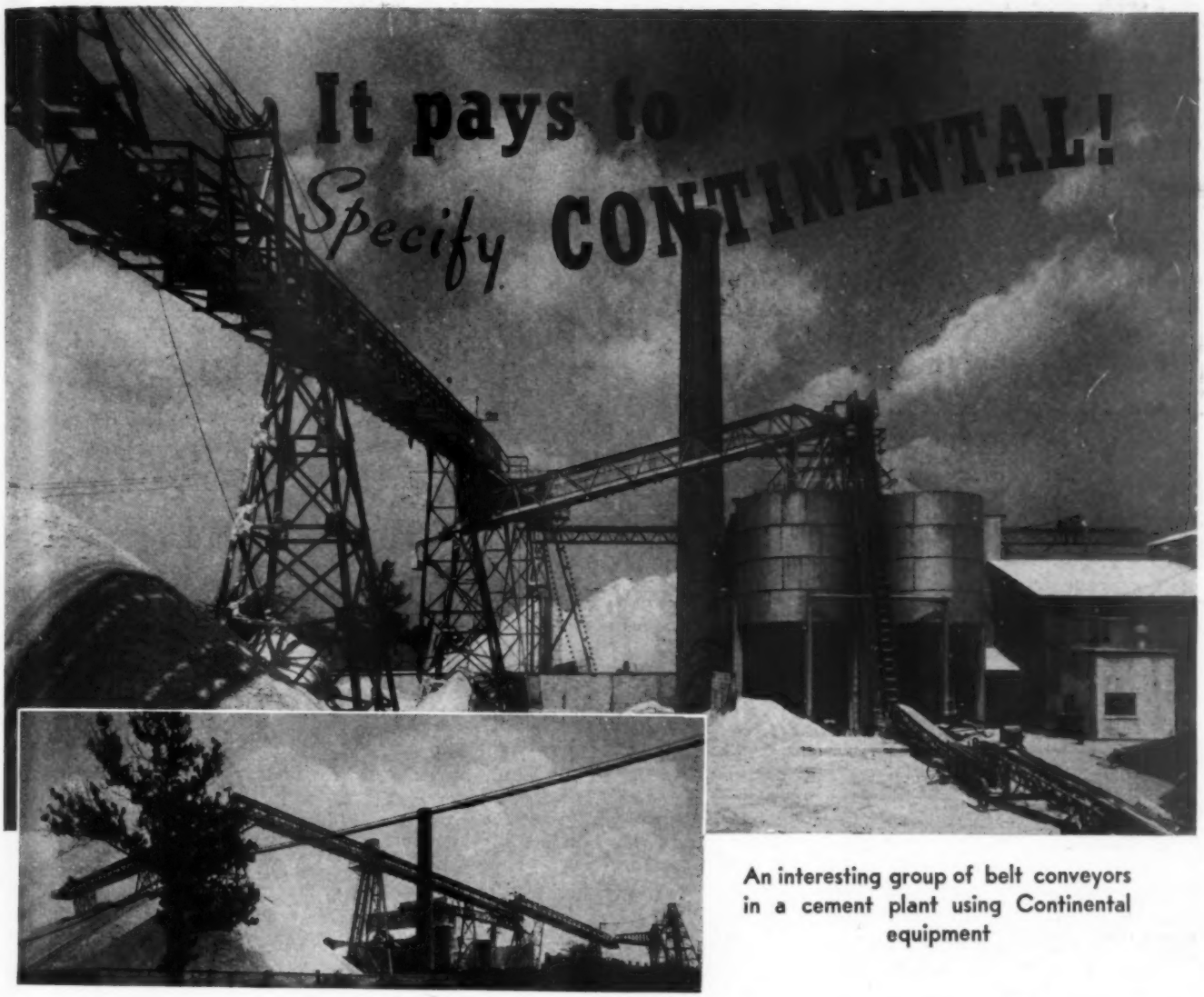


plunger injection pump and single orifice, pintle-type injectors—all this in a cylinder and crankcase block of heavy iron sections with large radius fillets and sturdy cross and end walls to insure structural stability and perfect alignment of all working parts. Special porting and directional baffles speed the coolant to all parts of the cylinder block and head to reduce scale deposits and insure long life. The Waukesha Motor Company, Waukesha, Wisconsin.

● Flexible Tubing

A new type of tubing that has the high flexibility of rubber and the sturdiness of steel is now being offered to industry. Named "Ronaflex," this tubing has been thoroughly tested up to pressures of 980 p.s.i. without any indication of bursting, leakage, or damage. It is claimed that the tubing can be bent, kinked, and twisted, yet provides safe, free-flowing transmission of air, water, gases, oil and volatiles.

This new tubing consists of a tough rubber tubing protected by strong steel wire braid cover to withstand abrasion, severe wear, and pressure. The rubber tubing is made of specially compounded synthetic rubber to resist the effects of oil and volatiles, and the braiding is constructed of either galvanized or stainless steel, aluminum, or bronze for specific conditions. The Ronaflex Tubing Company, Inc., Philadelphia, Pennsylvania.



An interesting group of belt conveyors in a cement plant using Continental equipment

Whether you require a complete conveying installation, replacements, or additions, specify CONTINENTAL for long life, dependability and economical operation.

Send us your problem or requirements and our engineers will be glad to assist you in your layouts of design. Where delivery is of prime importance, slight modifications in design by our engineers may speed up delivery through the use of more readily available materials.

As engineers and manufacturers we are in position to furnish complete installations of conveyors, elevators, feeders, and other Materials Handling and Power Transmission Equipment.

Continental Belt Conveyor Idlers, Screw Conveyors, Takeups, Pulleys Bearings, etc., are designed and built for long service and reduced maintenance expense.

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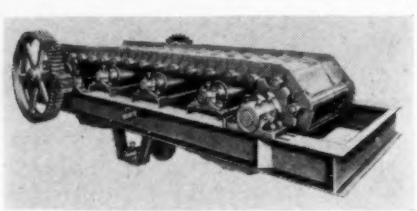
● Earthmover

Several improvements have been incorporated into the design of the "Terra-Cobra" self-propelled earthmovers. Long chain life and sprocket service is derived from new oil-tight drive-chain cases. Low speed sprockets and greater rim pull result in more efficient loading and operation. The extra heavy-duty steering

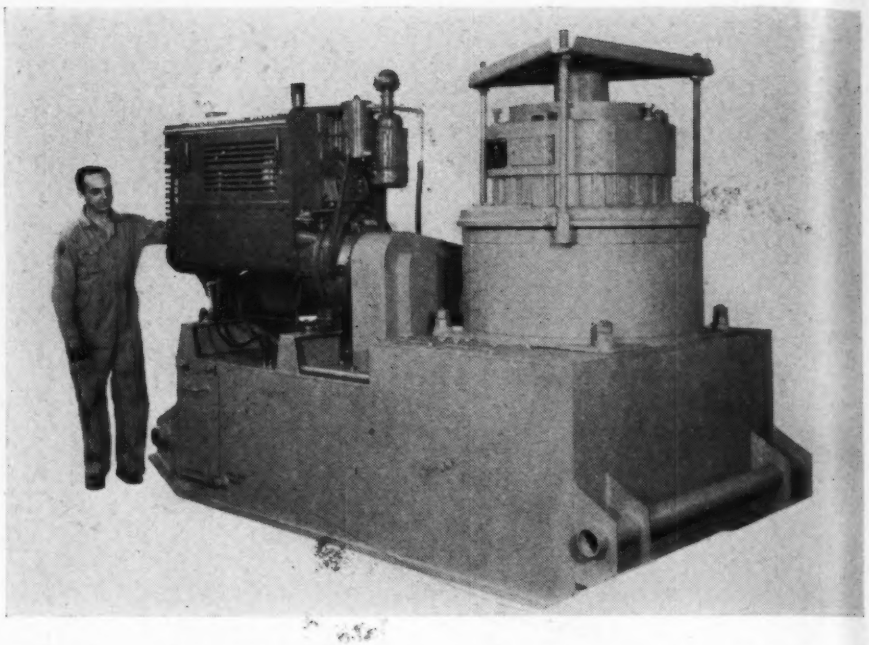
chain adds longer service life. Other improvements, which include a heavier steering arm, drive shaft and drive chain, have been adapted to withstand greater shocks and strain under the most rugged conditions. The Wooldridge Manufacturing Co., Sunnyvale, California.

● Apron Feeder

This Telsmith heavy-duty apron feeder is a self-contained unit complete on a steel frame with one back-geared shaft and drive sprocket. The foot shaft, head shaft, back-geared shaft and rollers are journaled in heavy babbitted bearings and mounted on a heavy structural steel



frame. Heavy loads can be dumped on it without injury. It is recommended for feeding the primary crusher, both jaw and gyratory type. Smith Engineering Works, Milwaukee, Wisconsin.



● Packaged Crushing Unit

The "Packaged Unit" consists essentially of a 22-in. Symons cone crusher, motor and drive, mounted on a welded steel supporting base and skid. This unit can be readily transported without disassembling drive and piping or draining oil from the pressure lubrication system. Entirely self-contained, it can easily be set up or taken down for transport from job to job. The unit will fit on the average heavy-duty truck and can be easily placed on or taken off the chassis by lifting equipment common to all contractors. It can be furnished with electric motor or with diesel or gasoline engine drive.

The capacity varies from 20 tons hourly at 3/8-in. setting to about 45 t.p.h. at 1 1/8-in. setting, depending upon the nature of the material being crushed and the rate of reduction being effected. The discharge product can be drawn off the crusher on a belt conveyor from any side.

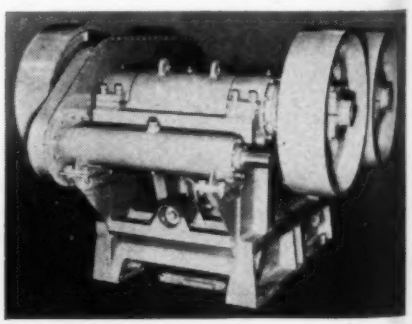
The diesel- or gasoline-engine driven unit is normally supplied with an engine of oversize rating. The electric-driver unit is furnished with an electric motor, starter with push-button station, and V-rope drive with safety guard. Both the engine and motor drive units are equipped with safety cut-offs for stopping the unit in the event crusher oil pressure drops below safe operating level.

The section of the supporting base immediately under the crusher proper serves as a discharge hopper. All compartments are dust-sealed. The lubricating system is complete, with independently driven oil pump and oil filter. The Nordberg Manufacturing Co., Milwaukee 7, Wisconsin.

● Twin Jaw Crusher

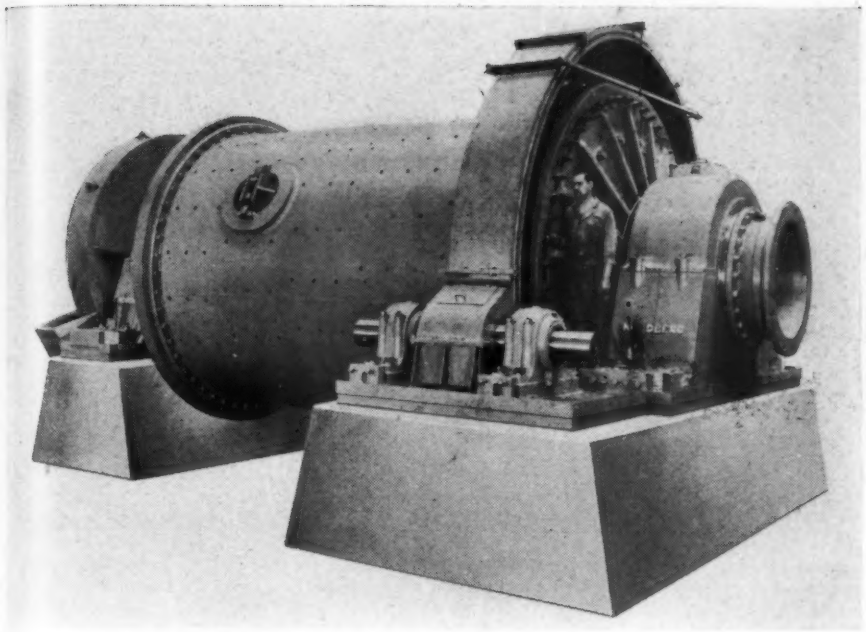
A jaw crusher with two movable jaws which are operated by two eccentric shafts and a double set of flywheels reportedly provides better and smoother operation because of the nearly 100 percent balanced rotary motion. High-speed crusher shafts permit the use of high-speed power units with a consequent reduction of total weights.

Because of its high capacity, a twin jaw crusher can often be used to do



the work of a regular jaw crusher and a roll crusher. They are especially suited for installation in portable plants because of the reduction in drives and savings of space by combining lengths, heights and widths of two crushers into one. The Iowa Manufacturing Co., Cedar Rapids, Iowa.

The bottom V-type doors in this 12.1-cu. yd. trailer are air-operated by controls in the truck cab. The unit weighs 11,118 lbs. The Landis Steel Company, Picher, Oklahoma.

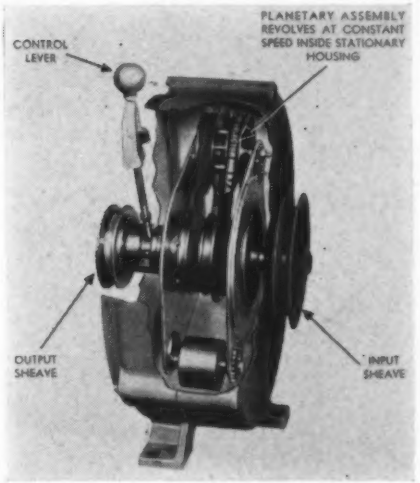


This wet grinding ball mill (10 ft. 8 in. inside diameter by 17 ft. in length) is said to be the longest mill of this diameter ever built. These mills have cast steel heads, with integral trunnions of maximum thickness, heavily ribbed to insure against breakage. Bolted or keyed liners of several materials can be supplied. A choice of a variety of gear specifications and drive arrangements is offered. The Nordberg Manufacturing Co., Milwaukee, Wisconsin.

● Speed Selector

Now available is a "Speed Selector" which employs planetary motion with four variable pitch sheaves and two standard cross-section V-belts to provide any speed from zero to 800 r.p.m. at constant torque from a constant speed power source. The multiplying action of the planetary converts a slight change in sheave pitch diameter to a wide change in output speed. It is claimed that the high and nearly constant belt speeds permit almost instantaneous changes in output speed by the lever-action self-locking control handle.

The new Speed Selector models, are available in ½-1- and 2-hp. output. Optional V-belts or flexible coupling input



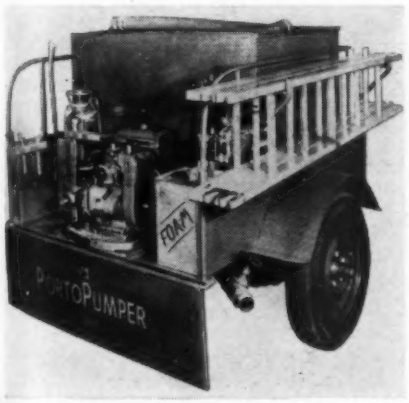
and output make the Speed Selector easily adaptable for mounting in any position on new or existing equipment.

Major advantages claimed for the Speed Selector are the following: infinite ratio, quick selection of speeds and ease of installation. Speed Selector, Inc., Cleveland, Ohio, and the B. F. Goodrich Co., Akron, Ohio.

● Portable Fire Department

The new "Camel", an optional model of the Porto-Pumper fire-fighting trailer, is a complete fire department in itself, claims the manufacturer, providing protection beyond city hydrant limits.

This model carries the same basic equipment as the standard Porto-Pumper:

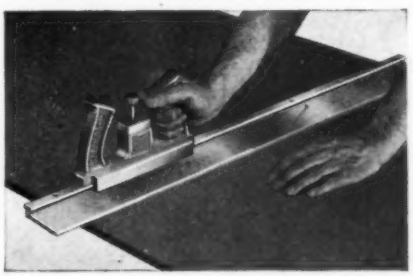


demountable, independent-powered, 85-lb. high-pressure utility pump; 50 feet of supply hose, 200 feet of fire hose; an 18-ft., 3-section extension ladder; fire axe and hand extinguisher; a selection of nozzles and hydrant adapters, plus the added feature of a 200-gallon tank. Porto-Pump, Inc., 227 Iron Street, Detroit 7, Michigan.

● Cutter for Wide Belts

A new type of belt cutter, the No. 300 "Alligator", has been developed by the Flexible Steel Lacing Company of Chicago for cutting belts up to 60 inches wide. Main features of the device are the head, which carries the blade, and a T-shaped base or guide rail.

To use the cutter the base is squared up with the center line of the belt, the



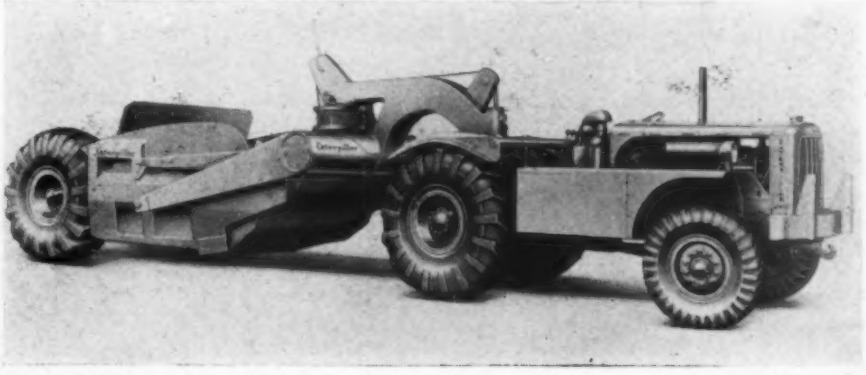
base is nailed to the belt and the cutter is pushed across the belt. Each cut is made about ⅛-in. deep and the blade is lowered another ⅛ in. With several rapid cuts a belt can be cleanly and squarely cut.

● Earthmoving Team

In this new earth-moving team, all components have been matched in design and power to assure maximum efficiency of operation. The parts making up this team are the new "Caterpillar" diesel DW10 wheel-type tractor, the No. 10 scraper, and the No. 21 cable control unit.

Notable advantages of the new DW10 over the predecessor model, says Caterpillar, are a 15 percent increase in power output; an improved clutch; and pressure lubrication of the roller bearings on all driven gears.

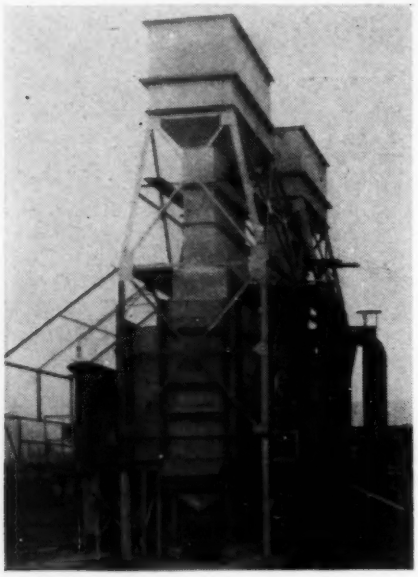
The No. 10 scraper has a heaped capacity (at 1.1 slope) of 11 cu. yd. This unit embodies such features as open-bowl design, high apron lift, positive forward ejection and self-sharpening cutting edges for live loading. The Caterpillar Tractor Co., Peoria 8, Illinois.



● Improved Calciner

The Ellernan calciner, developed before World War II, has been improved to the point of fully automatic operation. Calcining gases are tempered in a firing oven to the desired temperature before being admitted to the calcining chamber, a procedure which permits the calcining operation to be performed with a large volume of relatively low-temperature gases and tends to reduce fusing and fluxing and therefore refractory maintenance.

After preheating and calcining, the material is cooled to approximately atmospheric temperature before being discharged, permitting the kiln discharge material to be handled on regular belt conveyors.

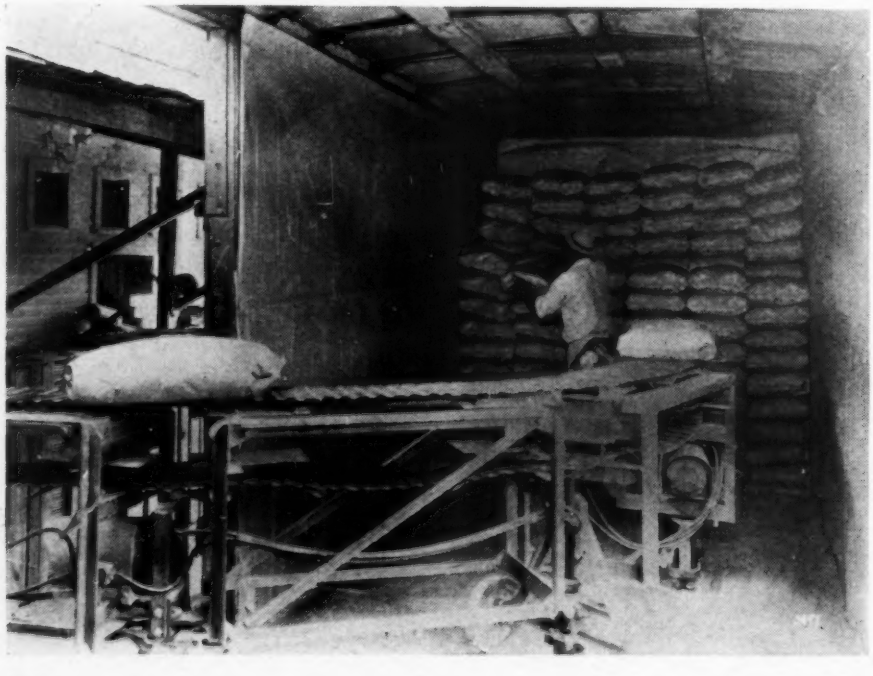


Tonnage output and fuel consumption are set and maintained at a predetermined rate. To hold the temperature and volume of the calcining gases constant, the oven temperature recording instrument is equipped with a damper control unit. The result is that there is a constant and uniform heat transfer within the kiln. The Ellernan Company, Salt Lake City, Utah.

New to the field is this cable-operated "Bullgrader," built for the TD-24, International Harvester's most powerful industrial tractor. With vertical and horizontal blade tilting adjustments, the 13 ft. 4 in. blade is controlled by either a rear-mounted power control winch or the front-mounted power control winch shown above. Bucyrus-Erie Company, South Milwaukee, Wisconsin.

● Car Loader

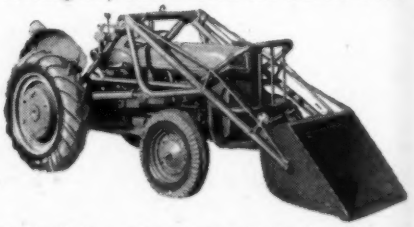
A box-car loader consisting of five 5-foot sections for single car loading, or seven for loading on two tracks is now available. The top of the conveyor is 3 ft. 8 in. or 4 ft. 8 in. high, depending on the height to which material is to be piled in the car. The device is furnished with an elevating conveyor that is adjustable to a man's shoulder. For 100-lb. bags, which are not piled over 4 ft. 6 in. high from the car floor, a deck is supplied in place of the elevating conveyor. One man can handle ten 100-lb. bags per minute. The Manierre Engineering & Machinery Co., Colby-Abbott Bldg., Milwaukee 2, Wisconsin.



● Hydraulic Loader

The "Loadtrac" is a new item incorporating many new engineering and design principles in a hydraulic loader. It is an attachment for the Ford tractor, designed for fast, powerful loading, digging, and lifting, in industry and on the farm. Its unique design enables the greatest hydraulic force to be exerted at the "breaking-out" position, at which point it will lift 2,000 pounds and sustain, at a height of 8½ feet, 1,000 pounds. It raises to this height in five seconds and lowers to the ground in four seconds.

The Loadtrac's design transfers loading thrust to the rear wheels through horizontally-mounted cylinders, thus removing any strain from the tractor itself.



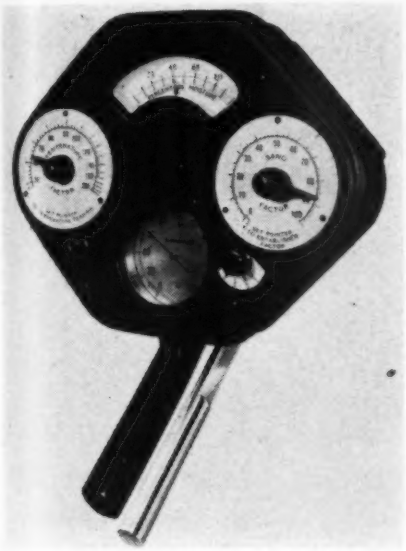
A built-in, self-contained, hydraulic system provides instant, positive, finger-touch control with its power derived from a heavy-duty, low pressure, 7½ g.p.m. pump driven continuously by a heat-treated spline drive from the front of the crank shaft. Thus, positive loader operation is continuous as long as the engine is running, without regard to the clutch position. The frame of the Loadtrac serves as a reservoir for five gallons of hydraulic fluid. The tractor's own hydraulic system remains free for plow, terracer, or other use.

The Loadtrac is mounted to the tractor by means of a special axle hinge pin to which the front of the loader is attached. In this manner, weight is placed directly from the loader to the axle. The Loadtrac is of tubular all-welded construction. The original installation of a special heavy fan sheave and axle hinge pin is made in an hour.

● Sand Moisture Meter

The 285 "Moistmeter" is a device which is inserted into sand for determining the moisture content of the material. The percentage of moisture is indicated on an easy-to-read dial. In this model all metering devices are housed in a strong light alloy casting, encircled with a rubber bumper.

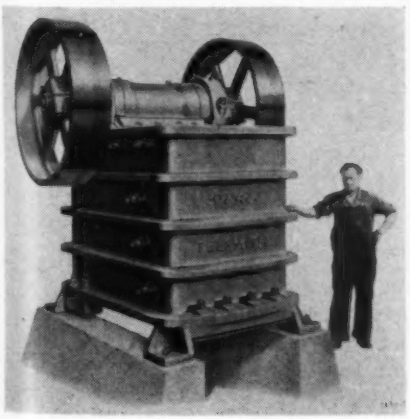
Two arms forming a pair of tongs are mounted to the housing. The curved sampling plate is attached to the end of the fulcrumed arm. As the operator



releases this arm, the sand trapped within the plate is squeezed to a definite hardness against the stationary arm. Electrical power is furnished by a 22½-volt battery which should be discarded whenever it fails to give a reading of 10 on the dial. Since the amount of current used is very small, however, the battery need not be changed frequently. Harry W. Dietert Company, 9330 Roselawn Ave., Detroit 4, Michigan.

● Jaw Crusher

The 30x42 Telsmith roller bearing jaw crusher is for coarse and intermediate crushing. It has a compact but massive steel structure with cylindrical roller bearings and high-speed crushing action.



The roller bearings allow for greater capacity and at the same time, lower power requirements. Simple adjustments allow for a wide sizing range. Smith Engineering Works, Milwaukee.

● Portable Gravel Plant

The Pioneer 150PG primary plant is designed for matched performance with the 140S secondary unit. It is a high-capacity portable plant for the gravel producer.

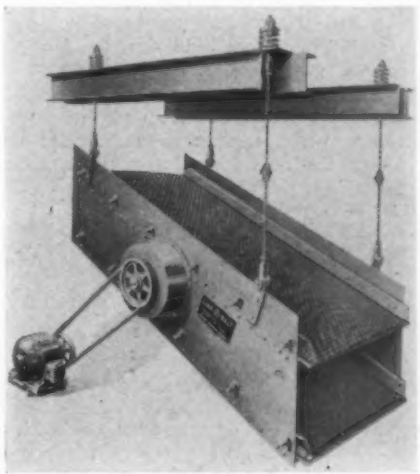
In operation, pit run material is fed to a 4- by 6-ft., 1½-deck positive throw vibrating screen, from which oversize is fed to the jaw crusher. Two sizes of crushers are available. Crushed material, together with material passing through the screen, is gathered by a 30-in. by 22½-ft. conveyor which delivers the material out from the front of the plant. Sand can be rejected to a side delivery conveyor. Pioneer Engineering Works, Inc., Minneapolis 13, Minnesota.

● Concentric Action Screen

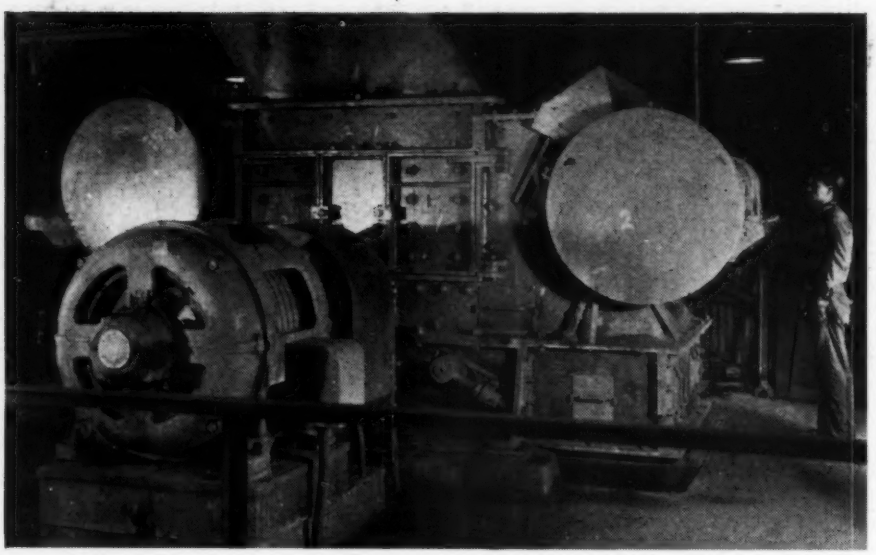
A new vibrating screen, known as "CA" (concentric-action) is now available to meet a constantly-growing demand for economical and effective sizing of a large variety of materials.

The CA is an inclined floor-mounted or spring-and-cable suspended screen with a balanced two-bearing vibrator mechanism which imparts a concentric or circular vibrating motion to all points of the screening surfaces. It can be used for both medium and heavy-duty sizing, as well as for scalping and dewatering or rinsing operations.

It is made with double or triple decks and in sizes ranging from 3x8-ft. to 6x14-ft. The Link-Belt Co., Chicago, Illinois.



Loading limestone at a quarry near Louisville, Kentucky, is this 1½-cu. yd. Bucyrus-Erie 38-B shovel. The independent twin-rope crowd eliminates heavy boom machinery and thus helps provide the fast, easy swing comparable to that of smaller, lighter machines. Other features cited are an independent boom hoist and "full feel" control with instant response to operator movements. Bucyrus-Erie Company, South Milwaukee, Wisconsin.



● Impact Crusher

Particularly suitable for wet, sticky clay, ores, and limestone is a new traveling breaker plate impact crusher. One large 42-in. by 50-in. reversible model has been built, with a traveling breaker plate on each end of the crusher.

The plates are individually driven through gear head motors. Where the material is of such a sticky nature that it would tend to build up on the back breaker plate, it is a simple matter to reverse the direction of this plate, thus preventing plugging or build up. Both plates are adjustable with relation to the distance from the tip of the hammers, making it possible to obtain two sizes of product. The reversible feature is also an advantage where abrasive materials are being reduced, in that the hammers can be worn down on one side and then the rotor reversed wearing the hammers down on the other side.

The crusher weighs approximately 60,000 pounds and will accommodate a feed of approximately 40 in. square by 18 in. thick. The Jeffrey Manufacturing Company, Columbus, Ohio.

● Heavy-Duty Shovels

The Lorain "820 Series" includes the Lorain 80 and the Lorain 820, both heavy-duty units.

Turntables of this series are designed with three separate horizontal shafts for (1) hoisting, (2) swinging, (3) crowding, traveling or derricking the boom. Each shaft is controlled independently and may be engaged separately or in any combination.

A special feature of the model Lorain 820 is the hydraulic clutch, which reportedly absorbs shock, eliminates vibration and cushions strains and stresses on the mechanism and cables of the machine.

On these models crawlers provide two travel speeds, in either direction, with a high speed of 1½ miles per hour, and will ascend grades up to 30 per cent. The crawler tread belts can be locked against movement in either direction, or in one direction while permitting free travel in the opposite direction. On uphill travel, the travel lock may be set to prevent downhill movement of the unit.

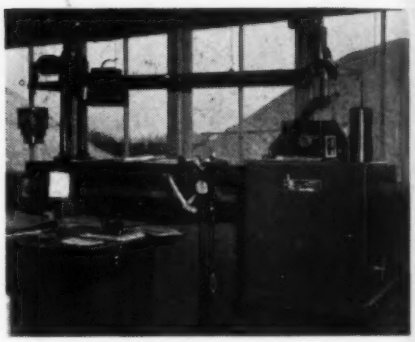
Both the Lorain 80, with a shovel capacity of 1¾ cu. yds., and the Lorain 820, with a shovel capacity of 2 cu. yds., are readily convertible to crane clamshell, dragline or hoe operation.

If desired, the unit may be equipped with a high-lift stripping shovel attachment. The Thew Shovel Co., Lorain, Ohio.

● Railroad Track Scales

The multiple-draft method of weighing railroad freight cars weighs one end of a car at a time, consequently a shorter scale is used. A Streeter-Amet automatic track scale recorder is attached to the scale, which permits the weighing of cars while in motion and automatically records the weight on a weigh ticket or continuous paper tape.

There are two types of installations in use, one utilizing a scale 12 ft. 6 in. in length, and the other 20 ft. Cars are pulled over the 12 ft. 6 in. scale by a locomotive coupled-in train. The Streeter-Amet takes over and automatically weighs and prints the weight of each



car while in motion. Dead rails are not required, as only two axles of a locomotive are on the scale at a time.

When the 20 ft. scale is used, cars are allowed to drift one at a time down grade and over the scale. The recorder automatically weighs and prints the weights, thus eliminating human errors. The use of locomotives in handling cars for loading and weighing may be eliminated. Empty cars are spotted on a grade above the loading area and are allowed to drift via gravity to the loading area as required. When loaded, they are again allowed to drift down grade over the scale and to the holding area. The manufacturer claims that expenses for crew and engine time are reduced, as motion weighing is four to five times as fast and more accurate than manual weighing—the human element being removed from the weighing operation. Cars of any length can be weighed by the multiple-draft method. The Streeter-Amet Company, 4103 N. Ravenswood, Chicago, Illinois.

● Rayon Conveyor Belt

A new belt, the Ray-Man Tension Master, is designed to meet the needs of quarries and limestone plants for a bolt of higher tensile strength for increasing heavy-duty, long-lift conditions. Because of extensive mechanization in mines and quarries in recent years the trend has been toward longer belts, higher lifts and heavier loads.

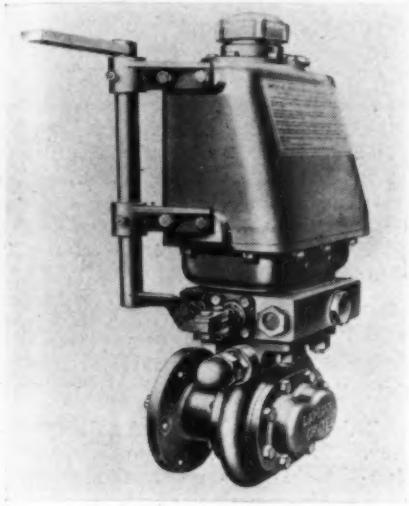
It is claimed that the new belt troughs easily, has fiber resilience, can utilize conventional type idlers and pulleys, can be field-spliced with conventional methods and permits construction modifications to suit varying service conditions. Raybestos-Manhattan, Inc., Manhattan Rubber Division, Passaic, New Jersey.

● Hydraulic Products

A new line of hydraulic products, including hydraulic pumps, motors, valves, cylinders and a compact 3-in-1 power unit incorporates in one design, a pump, a control valve and a reservoir.

Pumps, motors, and power units are available in four sizes—15, 25, 40 and 60 g.p.m. Cylinders are available in three diameters—4-in., 5-in. and 6-in. Valves come in two sizes—for control of flows up to 50 g.p.m. and 70 g.p.m.

The pumps and motors include such design features as interchangeable spur-type gears, needle roller bearings, positional), self-centering, and may be had with or without automatic surge control. Cylinders are double acting and can be mounted in any position. Pistons are ring-type for high pressure sealing, with piston rods chrome plated.



tive lubrication, and bronze reversible thrust plates. The pumps are designed for automotive, portable or stationary installations and may be electric motor or engine driven. The power unit incorporates some revolutionary principles, such as surge control, a super-charged pump and a small-capacity reservoir. Valves are spool-type (float position op-

The new hydraulic line is for use on any type of machinery. Applications thus far include agricultural implements, dump trucks, snow plows, wagons, excavators, power saws, conveyors, hoists, and all types of road machinery. The LaPlant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa.

● Multi-Purpose Tractor

Now available for the D8 "Caterpillar" track-type tractor is the "Hystaway" combination dragline, clamshell, and crane which retains the utility use of the tractor-mounted bulldozer.

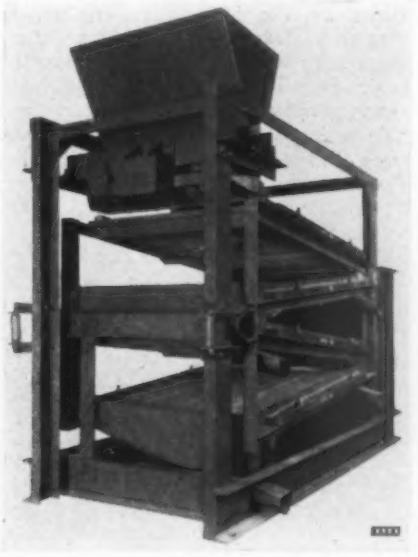
The unit can be mounted in two hours or removed in one, following initial installation, to allow the use of the tractor for other jobs. The mobility of the track-type tractor permits the use of the unit in places where a shovel cannot walk and on jobs too small to be economical for shovel operation.

It is available in a basic unit with attachment groups for the D6, D7, and D8 model tractors. A ½-cu. yd. bucket is standard on the D7 and D8 and a ⅜-cu. yd. bucket on the D6. The Hyster Company, Portland, Oregon.

● Dry Material Grader

This "Multi-Form" grader will handle any material in dry granular form between 4 and 250 mesh.

Materials are fed from the hopper to the top screen. The over-size material is carried off through chutes at the



end of each screen, the "unders" passing through the screen into a pan and thence through a wide chute onto the next finer screen. The manufacturer claims that a uniformly even flow of material is assured, and every square inch of screen surface utilized.

Since all of the screens are vibrated as a unit, the screening action of each sieve is identical with the others.

The standard model has 4 decks, having a total screening area of 26 sq. ft. The Exolon Company, Tonawanda, New York.

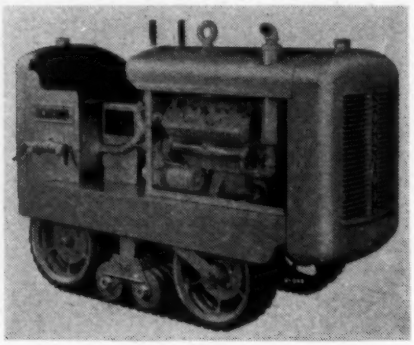
● Lightweight Excavator

The Osgood Type 5 Model 150 (⅜-cu. yd.) excavator is a speedy, maneuverable, lightweight machine, designed for excavating and material handling jobs that are not profitable for the larger size excavators. It is available as a shovel, dragline, clamshell, crane, and hoe, and is readily interchanged from one class of service to another.

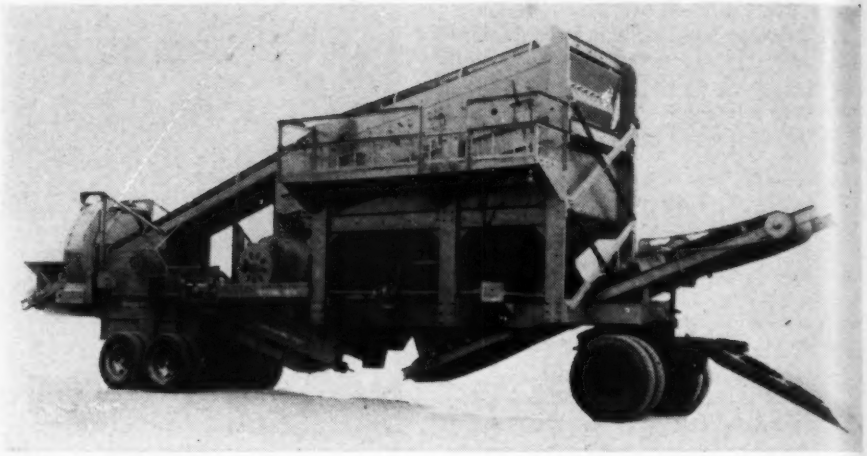
All main operating machinery is positioned on a welded deck, proportioned properly to take all strains and stresses set up in operation. It may be powered with either a gasoline or a diesel engine. Twin disc clutches activate the swing, travel, and hoisting motions. All operating controls are grouped around, and in front of, the operator. The cab is designed to give the operator a full view of his work, and protection from the weather. The Osgood Co., Marion, Ohio.

● Mobile Compressor

A new mobile compressor, the No. 60 "Crawler", not only furnishes air for pneumatic tools, but offers in addition the possibilities of operating many other attachments — bulldozers, lawnmowers, power take-offs, etc. The unit is provided with a continuous rubber track with



integral lugs. Speed of the crawler is from 1 to 18 m.p.h. and is regulated by a transmission having five speeds. Schramm Inc., West Chester, Pa.



● Portable Crusher

The Universal Model 1800 portable hammer crusher or pulverizer is a new combination of time-tested units for the production of agricultural limestone or crushed rock. It consists of a hammer crusher on a truck with a rotovator, a double-deck vibrating screen, and the necessary conveyors, hoppers and drives to make a complete and perfectly articulated unit for secondary crushing. Power is applied at the side of the plant through a Universal joint to a special jack shaft on the truck. The Universal Engineering Corporation, Cedar Rapids, Iowa.

● Largest Dipper

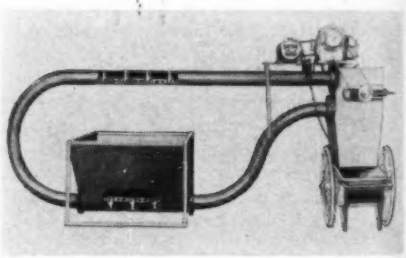
Armor plate steels developed in World War II were largely responsible for the development of a 40-cu. yd. dipper on the Marion Type 5561 stripping shovel. In combination with the 5561, this world's largest dipper can scoop enough earth at one bite to fill a room 10 by 12 by 9 ft., swing it two-thirds of a city block—240 feet—and dump its load atop a 7-story building.

This dipper and a new-type lattice boom on the 5561 have resulted in greater yardage figures, according to reports from the field. By perfecting the lattice-type boom and employing high-strength alloy steels, the engineers were able to increase the length of the boom from 105 to 120 feet. The Marion Power Shovel Co., Marion, Ohio.

● Sediment Remover

A new mechanism has been developed for the completely automatic removal and transfer of sediment from settling tanks.

This mechanism, the Houdaille conveyor, is basically a motor-driven endless link-chain, on which 4-in. neoprene rubber flights are mounted at 6-in. intervals. It operates through the V-bottom



of the settling tank, trapping the sediment between the flights and conveying it through a 4-in. pipeline to a collection and disposal point.

The conveyor turns sharply upward upon leaving the tank, thus allowing fluid to drain back. It is driven through a chain-and-sprocket transmission from an electric motor-and-gear reduction case. The speed of operation is about 2 to 3 feet per minute. The Honan-Crane Corporation, 44 Madison Avenue, Lebanon, Indiana.

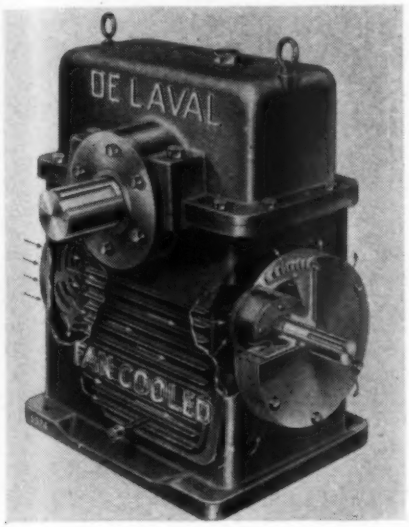
● Electric Hoist

The Ford "Whippet" electric hoist has been designed to meet the demands of modern high-speed production. Rugged construction and low operating costs make this hoist adaptable for many heavy-duty lifting jobs. Capacities range from 250 lbs. to 2,000 lbs. They can be furnished with trolleys, either parallel or cross mounted. The standard lift of this sleek smooth-running wire rope electric hoist is 12 feet; however, a 20-ft. lift can be furnished when specified. The Ford Chain Block Division of the American Chain & Cable Co., Inc., York, Pennsylvania.

● Air-Cooled Reducer

Forced air-cooling, as employed in this new fan-cooled speed reducer, reportedly removes the heat so that the capacity of the gear is double for practically all ratios and sizes at 1750 r.p.m. This permits the use of smaller, lighter and less expensive speed reducers, without sacrifice of efficiency or durability.

A fan mounted on the worm shaft draws air at high velocity over and around heat-dissipating ribs upon the



side of the oil reservoir housing the gearing. It is claimed that the use of a double wall greatly increases the effectiveness of the cooling by confining the cooling air to the housing, thus securing the close air-to-metal contact necessary for maximum heat transfer. The De Laval Steam Turbine Company, Trenton 2, New Jersey.

● Hydraulic Transmission

Special features of the new Wickers transmission include smooth and stepless speed adjustment from zero to maximum output r.p.m. in either direction of rotation. Full and constant torque power characteristics are maintained throughout the entire speed range. The input shaft may be driven in either direction

without mechanical change. Also, the unit may be stalled without damage, as it is equipped with automatic overload protection.

The Vickers TR2-R13F13 variable speed hydraulic transmission is rated at ½ hp., continuous duty. Vickers Inc., 1598 Oakland Blvd., Detroit, Michigan.

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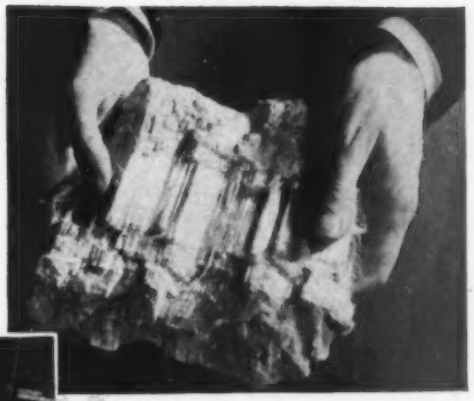

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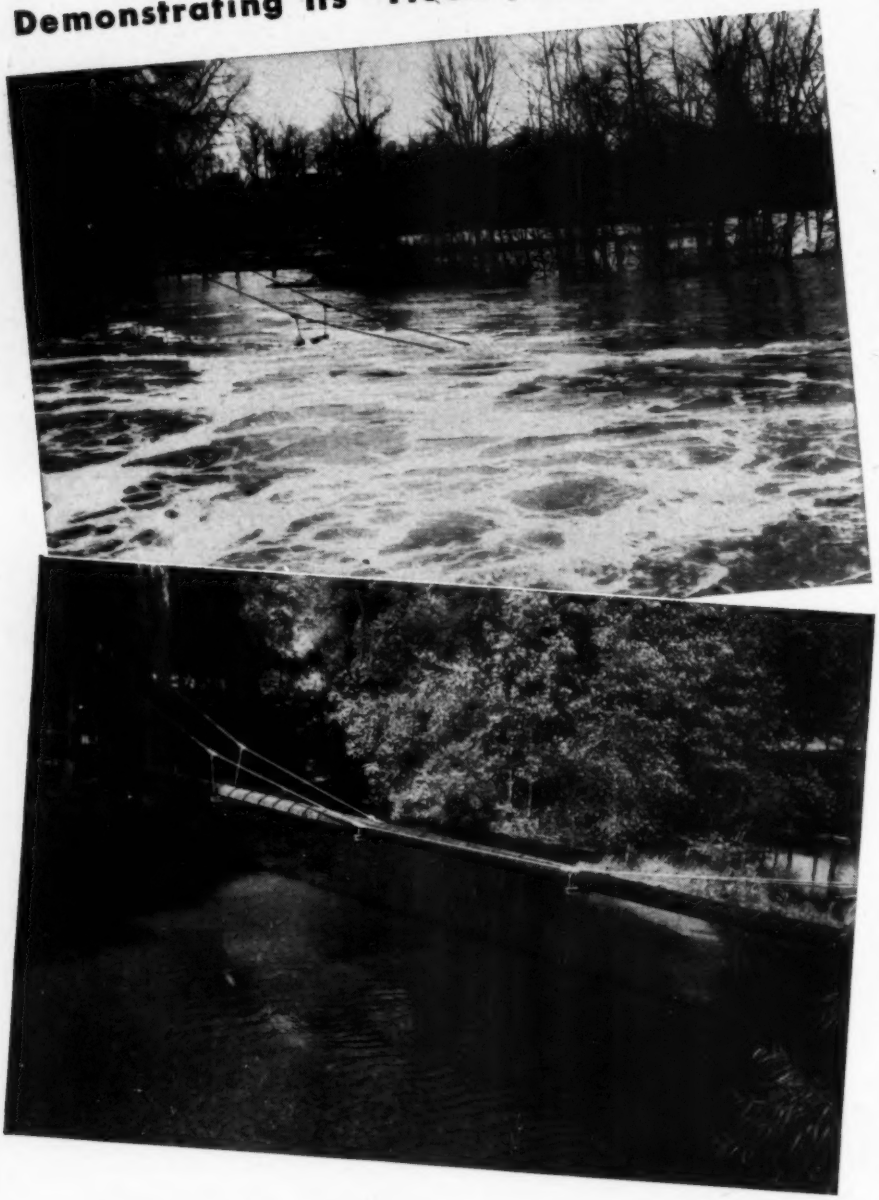
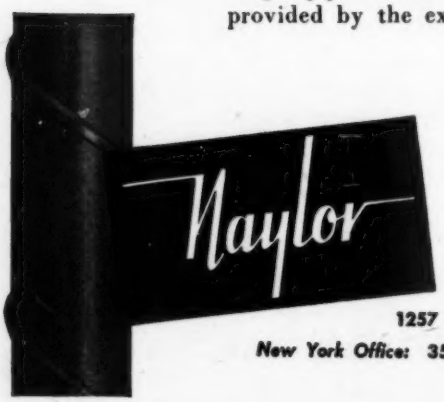
It's NAYLOR Light-Weight PIPE

Demonstrating Its "Flood-proof" Performance



This photographic record shows how a line of Naylor light-weight pipe even takes floods in stride. The extra strength provided by the exclusive Naylor Lockseam Spiralweld enabled this line to take the pounding of flood waters as shown in the upper picture and come through unscathed as shown in the lower view.



NAYLOR PIPE COMPANY

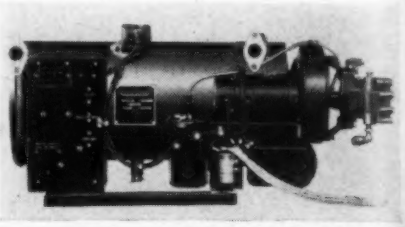
1257 East 92nd Street • Chicago 19, Illinois

New York Office: 350 Madison Avenue • New York 17, N. Y.

• Economical Heater

The Model 77 Anchor Post Products coolant heater develops 77,000 B.t.u.'s on about ¾ gallon fuel consumption per hour. It functions entirely independent of engine or vehicle operation.

Available in 12- or 24-volt models (gasoline or diesel fuel), the heater when hooked into the engine coolant or the heating system of a vehicle will maintain engine temperature at efficient and economical operating levels and provide an



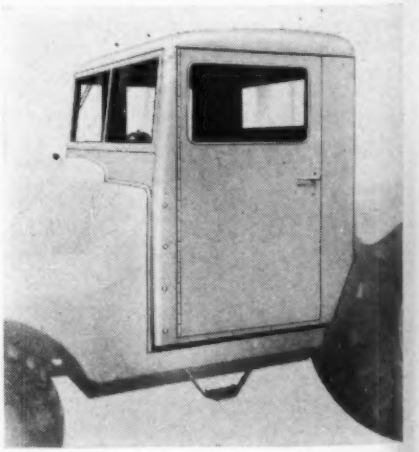
additional source of heat for complete passenger comfort. New in every respect, the Fluid Heat coolant heater provides a means of saving money in permitting outdoor storage of vehicles and machinery even during severe cold weather.

The Fluid Heat coolant heater can be aquastatically set to maintain a constant 50-deg. over-night temperature in the engine block and thereby inhibit the formation of cold-weather sludge. A simplified push-button reset of the aquastat will then bring the heater up to full output immediately and raise engine temperature to top efficiency levels just before the vehicle or machinery is used. Anchor Post Products, Inc., Baltimore, Maryland.

• All-Weather Cab

A new, all-steel-welded cab has been designed exclusively for attachments on the new 115-hp. "Caterpillar" diesel DW10 wheel-type tractor.

Offering year-around utility of the tractor and eliminating the threat of job interruptions due to inclement weather, the cab provides increased



comfort for operators and complete protection from the elements.

Of durable construction similar to that of the cab offered with the "Caterpillar" diesel motor grader, the new cab permits maximum visibility and maneuverability for the operator. The door and side and rear panels are removable.

● Wire Rope Cutter

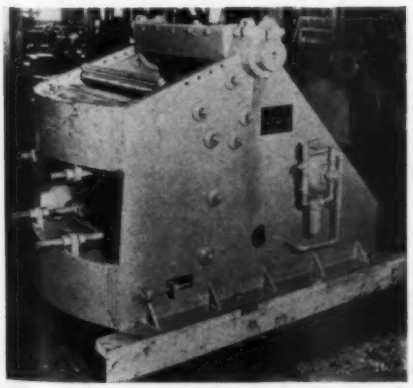
This hand-operated, front lever, bench-type wire rope cutter is made in two capacities. The body, side, and handle socket are made of malleable iron. The

blades are tempered tool steel, and those requiring extra strength are made of a special alloy steel. All parts are interchangeable. The T. H. Lewthwaite Machine Co., New York 17, New York.

● Measures Fluid Flow

The Bellows-Differential "Flowmeter" will be made as a mechanical flowmeter, as an electric flowmeter, and as a pneumatic-transmission flowmeter in a complete line of recording, indicating, integrating, and automatic controlling models.

The meter body, operating on a new principle, requires no mercury in its operation. A unique method of transmitting bellows motion to the pen arm is employed, which completely isolates the meter-body shaft from the measured fluid. The Bristol Company, Waterbury, Connecticut.



The "Contractors' Special" is one of the several new sizes of crushers added to the Kue-Ken Simplex crusher line. This model has a capacity of 40 to 50 t.p.h. at a ¾-in. setting or 50 to 60 t.p.h. at 1-in. setting. The unit weighs 16,500 lbs. The Straub Manufacturing Co., Inc., 507 Chestnut Street, Oakland, California.

"We saved 96 man hours when we installed U·S·S LORAIN ROLLED PLATE LININGS"

So reports a mill using U·S·S Lorain Rolled Plate Linings. But the savings in installation time they afford are but one reason for the popularity of these plate linings. They actually *stay in longer*. And—because they have high abrasion-resisting qualities, have plate and lift bars that are reversible and lift bars that are renewable at partial lining costs—*they help cut maintenance costs.*

The exceptional strength and toughness of U·S·S Lorain Plate Linings enable the use of thinner plates, thus increasing mill diameter and output.

This superior plate lining is available in the diameter, length and thickness best suited to your operating conditions. It will produce better results, more economically, no matter what you grind. For specific answers to your grinding problems, we shall be glad to supply the names of grinding mill manufacturers who distribute U·S·S Lorain Plate Linings.

U·S·S LORAIN GRINDING BALLS

—forged from new steel, they are accurately heat-treated to obtain hardness of maximum penetration combined with toughness to resist breakage. Standard sizes are available from ¾" to 5" in diameter.

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CARNEGIE-ILLINOIS STEEL CORPORATION
Pittsburgh and Chicago

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Tennessee Coal, Iron & Railroad Company, Birmingham, *Southern Distributors*
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UNITED STATES STEEL

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For Fine Material: Eagle Long Weir Screw Washer-Classifier-Dehydrator.

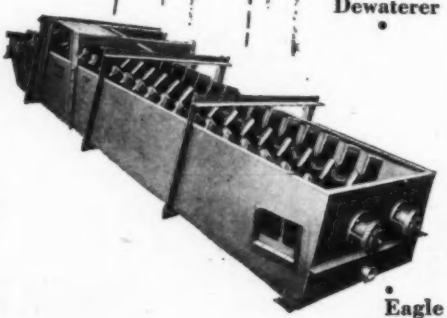
For Coarse Material: Eagle Screw Washer-Dewaterer.

For The Toughest Clay Ball Removal: Eagle Paddle Type Log Washer.

The NEW Long Weir, with adjustable weir lips; the NEW Perforated Flights; the NEW Built-In Feed Box; the Log Washer's NEW renewable, corrugated paddle shoes—these and all other features are fully described in Catalog 47. Send for your copy today.

Eagle Long Weir Screw Washer-Classifier-Dehydrator

Eagle Screw Washer-Dewaterer



Eagle Paddle Type Log Washer

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Sand and Gravel Equipment

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LOG WASHERS—DEHYDRATORS—SAND TANKS
CLASSIFIERS—REVOLVING SCREENS

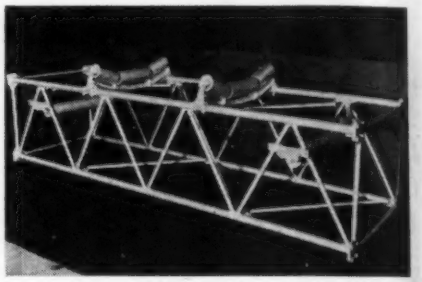
EAGLE IRON WORKS

133 Holcomb Ave. • Des Moines, Iowa

● Tubular Belt Conveyor

The "Marco" standardized and unitized tubular-frame belt conveyors are engineered to carry normal working loads on 40-ft. clear spans, plus a 400-lb. eccentric load concentrated at the center of the span and imposed at a distance of 2 ft. outside the frame. This conveyor frame requires fewer supports, with resultant low unit stress.

Marco head and tail sections are factory assembled. The intermediate, or insert sections, are stocked in varying



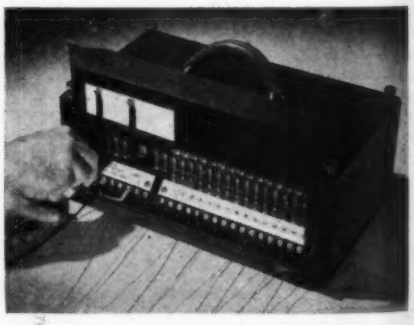
widths (up to 36 in.) and can be furnished in seven different standard lengths. The intermediate frame is comprised of two Warren truss frames with necessary cross bracing to form a box when assembled. One joint frame is employed at each intersection.

The conventional standardization and unitization of these units permits the moving and re-arranging of the conveyors to meet different job conditions. All accessories are available for the Marco tubular frame. E. F. Marsh Engineering Company, 4030 Chouteau Ave., St. Louis 10, Missouri.

● Delayed Blasting Switch

Development of a blasting timer is an important contribution to the precise control of industrial blasts. With this timer it is possible to set a series of blasts—up to seven—following so closely upon one another that the vibration is greatly reduced.

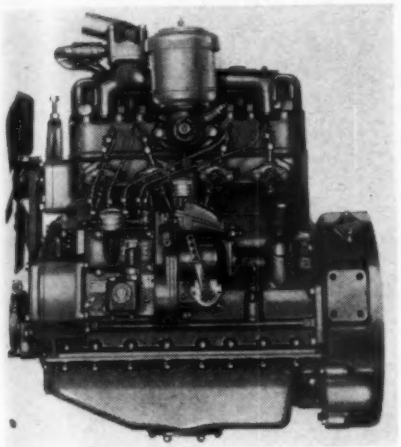
The timer consists essentially of a cam shaft driven through a solenoid-actuated



clutch by a 110-volt synchronous motor. The shaft operates the contacts for completing 14 individual circuits at various predetermined time intervals. There is an arrangement for closing all contacts when the timer is in the off or "ready" position, as indicated at an inspection window. This design not only provides for shorting all external circuits for safety when they are completely wired, but also permits testing each one at the shot just prior to the final hook-up. Made by E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware.

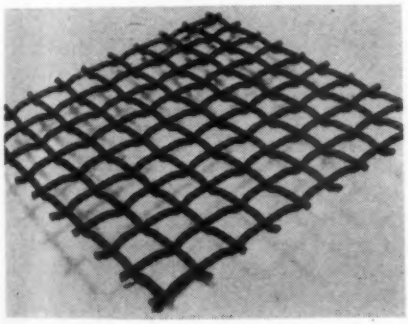
● Diesel Engine

The Hercules Model DIX-4 is a small four-cylinder diesel with a 3¼-in. bore and a 4-in. stroke. This engine is capable of operating successfully at speeds up to 3000 r.p.m., according to the manufacturer. The stripped engine develops 46½ hp. and weighs approximately 600 lbs. Because of its low weight, plus the fact that its overall dimensions are approximately those of the gasoline

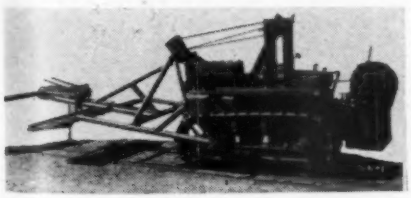


engines of similar displacements, conversions can be readily made without fear of any compromise in performance.

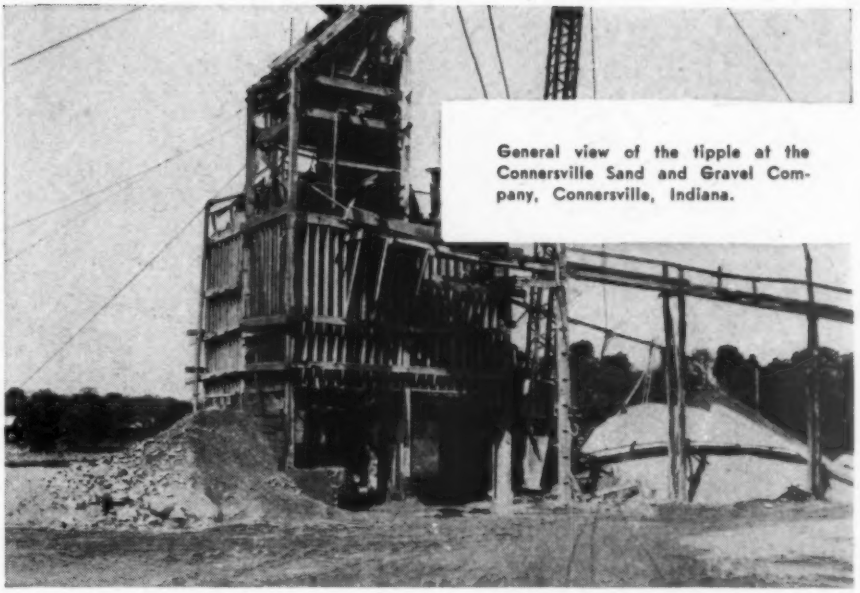
Well balanced, counterweighted crankshafts supported in five main bearings promote smooth operation even at these comparatively high speeds. The Hercules Motors Corp., Canton, Ohio.



A flat-surfaced aggregate wire screen that is designed with over 75 percent more metal wearing surface, greatly extending screen life. The advantages of the Roeflat construction can be incorporated in wire screens of practically every design. John A. Roebling's Sons Company, Trenton 2, New Jersey.



The Jumbo drilling machine pictured above is mounted on a 5-ton Caterpillar tractor with an engine which operates on compressed air. The 12-ft. boom is of 3-in. pipe. The 4-ft. drill bars are reinforced at the center with shafting and may be rocked independently by means of a clamp at the end of the boom. The boom is raised and lowered by an air-operated cone friction winch and cable falls. The Galena Machine & Electric Company, Galena, Kansas.



General view of the tipple at the Connersville Sand and Gravel Company, Connersville, Indiana.

Satisfied Customers ... PLAT-O product

The rugged design and all-welded construction of Deister Plat-O Vibrating Screens assures maximum production and minimum maintenance throughout long service life. These are important reasons why leading aggregate producers have standardized on Deister Screens.

Close-up of the Deister 4' x 8' Plat-O Vibrating Screen which handles 85% of the raw material.

Among the many "well satisfied" customers who rely on Plat-O Screens are R. A. Wilson, president, and Harley Corbin, plant foreman, Connersville Sand and Gravel Company, Connersville, Indiana. The company produces concrete gravel, sand, and pea gravel. Their 4' x 8' triple-deck Plat-O Vibrating Screen, now with three years of operation behind it, handles 85% of the raw material supplied by a 2-yard bucket in a slack-line operation. The Plat-O has given trouble-free performance since its installation.

For complete information on how you can supply Plat-O Vibrating Screens to your operations, write to the Deister Machine Company, Fort Wayne 4, Indiana.

DEISTER MACHINE COMPANY

Fort Wayne 4, Indiana

***SECO** is one of America's largest makers of **VIBRATING SCREENS** exclusively*

Our greatly expanded facilities now make it possible for you to obtain prompt delivery on standard or special models of Seco Vibrating Screens, the only vibrating screens with fully controlled true circular action. Send your problem today! Dept. L.

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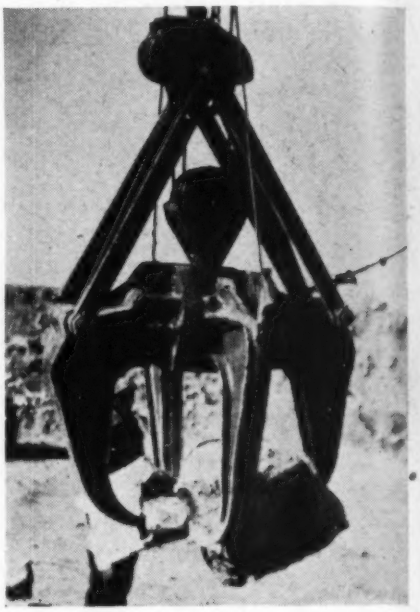
In Canada: United Steel Corp., Ltd., Toronto

● Rock Grapples

An "Owen R. A. Grapple" offers a method of handling irregular-shaped rocks blasted in quarries. This grapple, equipped with rock tines, enables the grab to enter the voids, making it possible to handle more than one stone at a time. The tine arrangement is designed

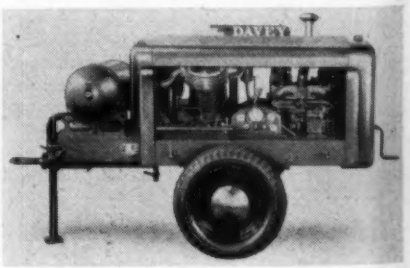


in such a manner that all four are independent, but all grip with the same power.

The semi-blade rock grapples in sizes 510, 610 and 86 are used extensively for the handling of the smaller rock. The shapes of the blades are such that this grapple will gather the smaller rocks, picking up a very satisfactory load. The Owen Bucket Co., Cleveland, Ohio.

● Compressor

This new compressor (model 60 V) is available in standard skid and 2-wheel pneumatic-tired trailer mounting styles, and also with flanged wheels for railroad work. It is likewise offered (complete with heavy-duty power take-off) as an "Auto-Air" compressor for truck mount-



ing. The compressor produces 60 c.f.m. at 100 lbs. pressure and is designed for heavy-duty service.

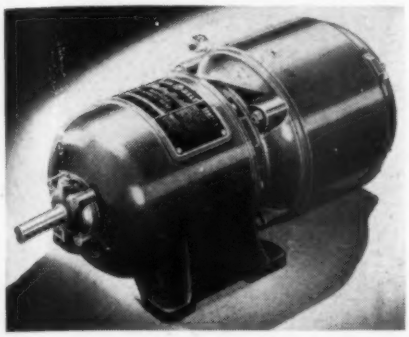
The compressor has one low pressure cylinder with 5¾-in. bore and 4½-in. stroke. The high pressure cylinder has 3⅝-in. bore. Operating speed is 1225 r.p.m.

Weight of the 2-wheel model is 2100 lbs. Over-all dimensions are: length 88 in.; width, 62 in. (tire track line, 52½ in).; height, 51½ in. The Davey Compressor Co., Kent, Ohio.

• Power Package

A new type of "packaged" power unit, known as "Electro-fluid Drive" is available in horsepowers up to 20. This is a compact, motorized hydraulic combination consisting of a general-purpose a.-c. induction motor, flange-mounted on a sturdy housing.

Its output shaft may be direct-connected to the driven machine or to a speed reducer unit. It may also be connected to the driven machine through

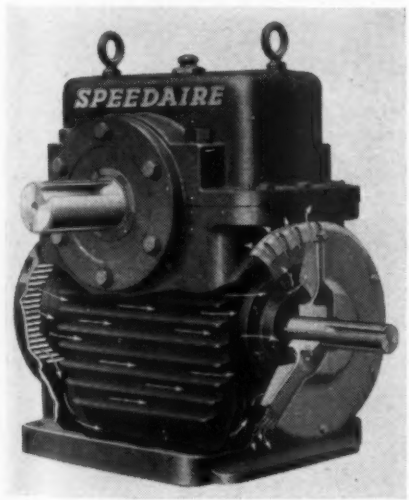


the medium of chain, gear or belt drives.

Each fluid coupling has a primary and a secondary element. The primary element may be likened to a centrifugal-pump impeller and the secondary, or output element, to a waterwheel or runner.

The coupling is filled with a light mineral oil of steam-turbine quality. When the motor drives the impeller, it causes oil to flow through the runner buckets back to the impeller, thereby rotating the runner through the medium of the oil.

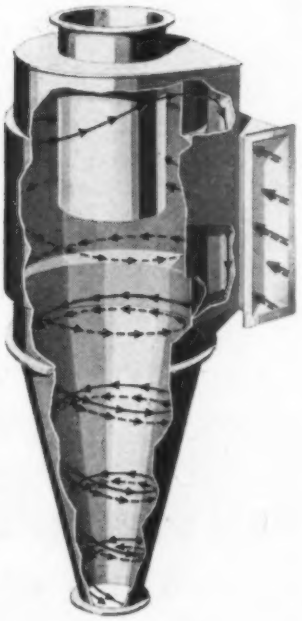
The torque of the motor is transmitted from impeller to runner by the fluid in the coupling. There is no mechanical connection between the two elements of the fluid coupling. The Link-Belt Company, Chicago, Illinois.



The "Speedaire" unit, one of the newer products of the Cleveland Worm & Gear Company of Cleveland, O., is an air-conditioned speed reducer built with a double-walled housing. An induction fan on the coupling end of the worm shaft draws a high-velocity air stream between the inner and outer walls. This feature reportedly increases the capacity of the Speedaire to double the rating of standard worm gear units of equal size and frame, when operated at motor speeds.

in planning

Dust Recovery



The "Brass Tacks" Approach

is to get down to fundamentals. What equipment will collect dust particles in the sizes that count, with an efficiency you can count on, and at the most practical cost. . . . For economy, a system's got to be simple — without moving parts or need for maintenance. That means a Buell van Tongeren Cyclone, if you really want to trap the low-micron fines, too. Only the van Tongeren has the Shave-off, to put it in the high efficiency class. A Buell catalog makes this all plain. Write for one, its "brass tacks" approach makes it easy to read.

Buell Engineering Co., 12 Cedar Street, Suite 5000, New York 5, N. Y.

buell

Engineered Efficiency in DUST RECOVERY

So you did break your neck to get genuine Crosby Clips!

Why stick your neck out, in buying wire rope fasteners? The difference in cost between genuine CROSBY CLIPS and the cheapest fasteners you can buy is certainly not much of an item. CROSBY CLIPS are *drop-forged*—not cast. Channel grooved base, high side wings, chamfered bolt ends, are priceless features of quality. Sold by distributors everywhere, in sizes from ⅛" to 3".

Made only by AMERICAN HOIST & Derrick Co., St. Paul 1, Minnesota.

Industry uses more

CROSBY CLIPS

than all other drop-forged fasteners

For Armored Construction . . . specify AMERICAN BLOCKS AND SHEAVES

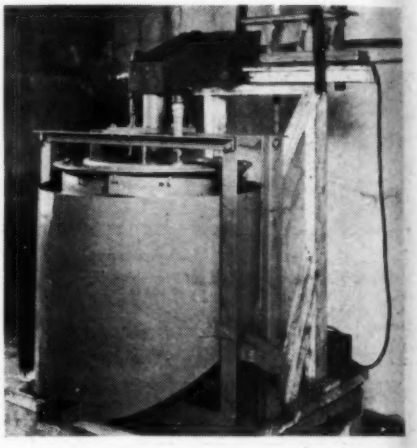
● A complete line of wire rope blocks—all types, all sizes, in capacities from 1½ to 250 tons. Thick steel side plates, heavy pins and axles. Ask for American equipment when ordering.

ONE MAN LIFTS 10,000 LBS. WITH THE AMERICAN HANDIWINCH

● Gives one man the power of a crew. Weighs only 95 lbs. Handles lifting, loading and pulling jobs up to 5 tons. All steel construction. Ask your distributor.

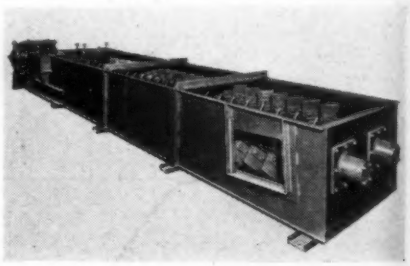
● Magnetic Separator

This wet cone-type continuous magnetic separator, the "Memco," was especially designed for the concentration of finely divided magnetite ores, but it also has application for the removal of magnetic particles from cutting oils. The material to be separated, which is in solution with three or more parts of liquid to one part of solid, is fed to the top of

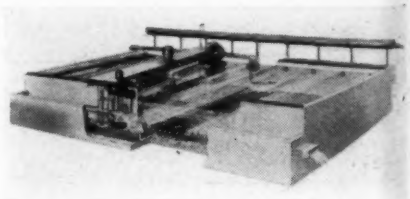


the magnetic separator. The magnetic material is discharged from one outlet and the nonmagnetic from the other.

The machine is available in sizes ranging from 2 ft. to 10 ft. in diameter, and in multiples from one to four stages of operation. The Magnetic Engineering & Mfg. Co., Clifton, New Jersey.



Used in the limestone and rock and gravel industries for removing clay and fine materials, this modernized log washer incorporates a water-lubricated revolving cutless rubber bearing on the lower end stub shaft, wear-resistant steel plate blades, and a new drive integral with the washer. The Allis-Chalmers Mfg. Co., Milwaukee 1, Wisconsin.



The "Automatic Backwash Rapid Sand Filter," manufactured by Hardinge Company, Incorporated, York, Pa., employs a traveling, automatic backwash mechanism which cleans the filter bed without interruption to the filtering process. It is particularly adapted for purifying industrial water supplies, sewage treatment, trade waste recovery, municipal water treatment, etc. No shut-down or change-over is necessary while cleaning is in progress.

• Machine of Many Uses

The Thomas "Metal Master" is a machine of many uses, including arc welding, cold welding, disintegration, brazing, soldering, drill pulling, air gun extraction, etching and demagnetizing.

The supermodel has an air-cooled, precision-built disintegrating head, adjustable to any position. The groundwork

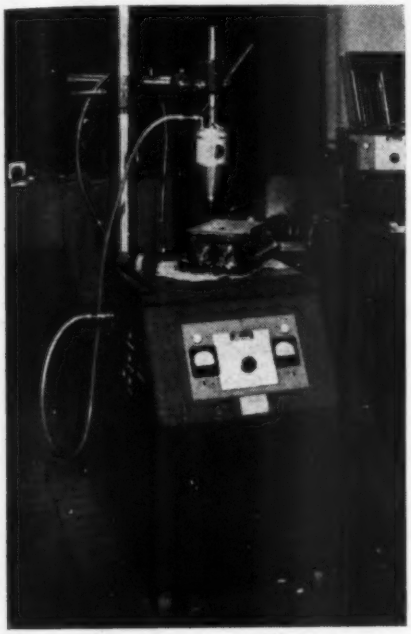


plate is tapped for securely strapping the work down and is grounded to the transformer. The post is 82 inches high, and the 27-inch radial arm has a full 360-degree radius. The machine is equipped for 220 volts, 50-60 cycle. The Clinton Machine Company, Clinton, Michigan.

This new centrifugal pump has the ability to prime itself (with dry suction lines) without the use of packing or mechanical seals. It is constructed of materials which are acid resistant. The LaBour Company, Inc., 1605 Sterling Ave., Elkhart, Indiana.

R. G. LeTourneau, Inc., of Peoria, Ill., has announced the appointment of William Jacks & Co., Ltd., as exclusive distributors of LeTourneau equipment for the five branches in India: Calcutta, Bombay, Lahore, Karachi and Madras. Although these are all branches, they will operate independently of each other.

Products that stand the test of Time...

HARDINGE
MATCHED EQUIPMENT
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Behind each Hardinge product stands forty years experience in producing long-lived, matched equipment for the stone products industry . . . gauged to the job.

CONICAL BALL MILLS
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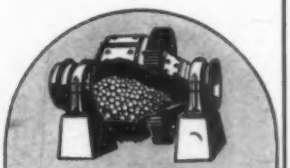
"AUTO-RAISE" THICKENERS
CLARIFIERS
AGITATORS
AUTOMATIC BACKWASH RAPID SAND FILTERS
STANDARD SAND FILTERS

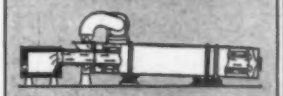
RUGGLES-COLES ROTARY DRYERS (nine types)
RUGGLES-COLES ROTARY KILNS
RUGGLES-COLES ROTARY COOLERS
KEYSTONE LIME KILNS

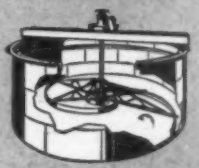
CONSTANT-WEIGHT FEEDERS
WEIGHT-RECORDING FEEDERS
DISC FEEDERS
DRUM FEEDERS
NON-FLOODING FEEDERS

ROTARY TUBULAR CONVEYORS
AUTOMATIC CENTRIFUGAL CLUTCHES
DIAPHRAGM PUMPS
SLURRY MIXERS

Made in
York, Pennsylvania . . .
the community
of craftsmen.


HARDINGE MILL


ROTARY DRYER


AUTO-RAISE THICKENER

COUNTER-CURRENT CLASSIFIER

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YORK, PENNSYLVANIA — 240 Arch St. • Main Office and Works
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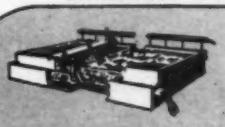
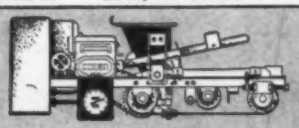
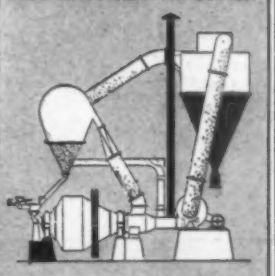
SAN FRANCISCO 11—24 California St. • 200 Bay St.—TORONTO 1


A.B.W. SAND FILTER


CONSTANT WEIGHT FEEDER


AIR CLASSIFIER

PERSONAL MENTION

RANDOLPH H. HOY, for the last 19 years sales manager of the Pittsburgh territory of Universal Atlas Cement Company, a subsidiary of the United States Steel Corporation, has retired after 40 years of continuous service in the same territory with the cement company.

Appointed to succeed Mr. Hoy, effective December 1, is FRED L. WAGNER, who has been assistant sales manager in the Pittsburgh territory for the last 5 months.

Mr. Hoy started with the cement company as a clerk in the Pittsburgh office in 1907. He became a salesman in 1910 and was appointed division sales manager in 1915. He has been sales manager at Pittsburgh since 1928.

Mr. Wagner was employed by Universal Atlas in 1916 as a salesman in the southern West Virginia territory. For more than 25 years he was the company's sales representative in various other territories in western Pennsylvania, West Virginia and metropolitan Pittsburgh. He was appointed assistant sales manager on July 1, 1947.

The following personnel changes have been announced by the Ideal Cement Company of Denver, Colo.:

ROBERT E. MARSH, promoted from design engineer at Denver to plant engineer at Boettcher, Colo.; ROBERT H. FERGUSON, promoted from design engineer at Denver to project engineer at Devil's Slide, Utah; GUY FRIDAY, promoted from engineer at Mobile, Ala., to plant engineer at Portland, Colo.; GLENN HORLBECK, promoted from design engineer at Denver to project engineer at Portland, Colo.; DAVID O. HOWE, selected as project engineer at Ada, Okla.

The following promotions have been announced by officials of the Warner Company of Philadelpha, Pa.:

I. Warner Jr.

IRVING WARNER JR. has been appointed engineering assistant to Alexander Foster Jr., vice-president in charge of sand-and-gravel operations and distribution. Since joining the company early in 1946, Mr. Warner has been working as an industrial engineer.

WILLIAM C. CURTIN is now assistant to George I. Purnell, general sales manager of the Bellefonte Division. Mr.

W. C. Curtin

Robt. Curtin

Curtin will also be office manager of Bellefonte sales.

ROBERT CURTIN, who has been on the Bellefonte staff, has been made a salesman to cover central Pennsylvania.

MELVIN DUNLAP has been appointed a foreman on the night shift at the Bellefonte mine. WILLIAM SMITH has been made day foreman at Bellefonte.

THOMAS R. VAUGHAN was recently elected assistant vice-president of the Freeport Sulphur Company of New York, N. Y.

The retirement of D. J. PARKER, supervising engineer of the mine safety station of the U. S. Bureau of Mines at Birmingham, Ala., was recently announced by James Boyd, director of the bureau. Mr. Parker has been associated with government service for over 33 years.

THOMAS F. ROBINSON, who has been manager of the plant of Gypsum, Lime & Alabastine, Ltd., Beachville, Ont., Canada, for the last 30 years, was recently honored upon the occasion of his 80th birthday anniversary. Directors of the firm presented him with a handsome silver tray.

FOR PRECISION AND ECONOMY

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✓ Check weights in

with

MERRICK SCALES

Write for Information

MERRICK Weightometer supplies a continuous weight record of materials in transit. Easily installed, durable, and very economical.

Fast and accurate weighing of materials is the first essential in every phase of production.

MERRICK SCALES meet that requirement by providing a constant, accurate, automatic weight record of bulk materials handled on belt conveyors . . . and contribute to the efficiency with which the end product is obtained.

MERRICK is proud that its successful relationship with industry has endured for over 35 years.

MERRICK Feedoweight weighs, totals and records amount of material fed. Correctly proportions two or more materials.

MERRICK SCALE MFG. CO. 185 AUTUMN STREET PASSAIC, NEW JERSEY

J. A. Sullivan

The appointment of JOSEPH A. SULLIVAN, assistant publicity manager, as manager of the advertising bureau, was announced today by George H. Reiter, vice-president of the Universal Atlas Cement Company, New York, a United States Steel Corporation subsidiary. Mr. Sullivan succeeds the late Max A. Berns. Mr. Sullivan has also been appointed director of public relations.

Before joining the staff of Universal Mr. Sullivan was associated with several well known Eastern firms. He became assistant publicity manager in 1946.

R. R. Bear

RAYMOND R. BEAR, vice-president and general manager of the Lehigh Portland Cement Company, was recently honored by officials of the firm from coast to coast in recognition of his service to Lehigh during the 50 years of its existence. At the testimonial ceremonies, held in Allentown, Pa., Mr. Baer was presented with a radio-victrola-television set and a hand-illuminated scroll which contained the signatures of 37 dinner guests who have served Lehigh with him for a total of 1,000 years.

It was pointed out that Mr. Bear saw the company grow from a one-plant operation with a capacity of 200,000 barrels a year to its present big-time status, with 14 plants in 11 states and an annual capacity of 20,000,000 barrels. He took an active part in planning, building and rebuilding all of Lehigh's operations.

MARK E. SNYDER, industrial relations director of the Marblehead Lime Company of Chicago and nationally known as a labor relations consultant, has been named chairman of the South Chicago Community Committee, to be in charge of the administration and supervision of Boy Scouting in this area.

FRANK W. TAYLOR has been appointed public relations director for The Celotex Corporation of Chicago. Mr. Taylor retired as assistant publisher of the *Chicago Sun* a short time before joining the Celotex staff. He had previously been managing editor and a director of the *St. Louis Star-Times.*

GEORGE P. MAHAN JR. has been appointed credit manager for Cumberland Portland Cement Company, it was announced by Cumberland's vice-president, P. T. Crownover. Mr. Mahan had for some years been employed in the Auditing Division of the Tennessee Valley Authority; more recently he had been in business for himself in Knoxville, Tenn. In his new post he will have offices in the Cumberland Portland Cement Company headquarters in the Chattanooga Bank Building, Chattanooga, Tenn.

WILLIAM H. KLEIN has been appointed operating manager of the Lawrence Portland Cement Company of New York, N. Y., according to announcement released by James H. Ackerman, president. Mr. Klein's headquarters will be at Northampton, Pa.

CHARLES POMEROY, who was formerly associated with the Portland Cement Association and more recently with the Kern Rock Company at Bakersfield, Calif., is now with the Airox Company of Los Angeles as chief engineer.

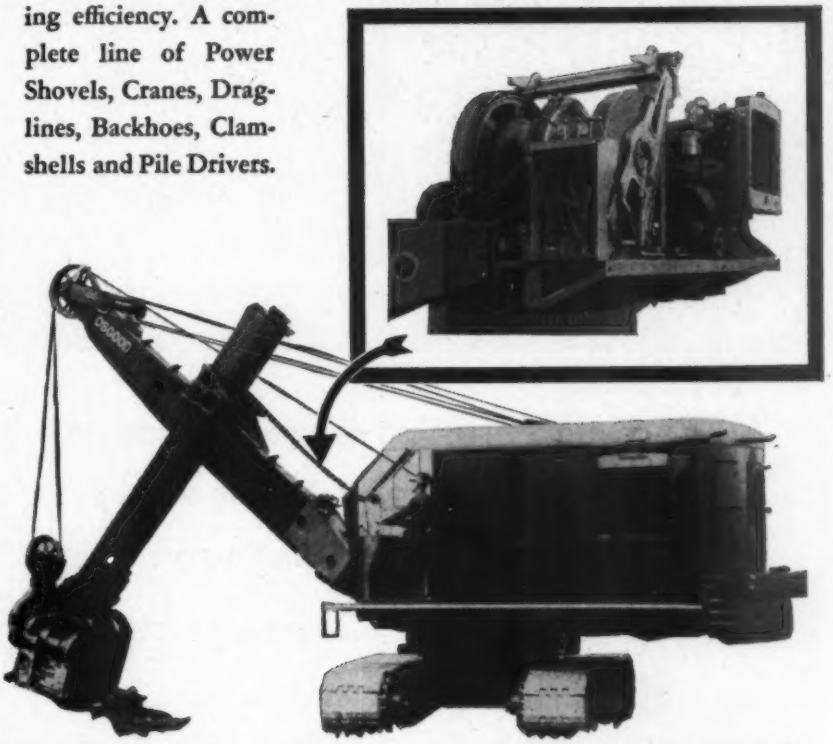
W. ST. B. MORE of the South Australian Portland Cement Company, Ltd., Brighton, South Australia, was recently a visitor in our office on his way home after a four-month trip through South Africa, England, Holland, Denmark, Sweden, Canada and the United States. During his tour Mr. More inspected various cement plants.

UNIT Cast Steel CONSTRUCTION
for

- **Maximum Strength**
- **Permanent Shaft Alignment**
- **More Efficient Arrangement of Machinery**

The deck of an OSGOOD is a single, full length steel casting, acting also as support for the engine and counterweight. Unit cast steel construction assures a strong, solid base, free from vibration, that keeps shafts and other operating parts in perfect alignment. All operating machinery is mounted on this deck to provide maximum accessibility.

Plan now to choose an OSGOOD . . . designed for greater operating efficiency. A complete line of Power Shovels, Cranes, Draglines, Backhoes, Clamshells and Pile Drivers.



POWER SHOVELS • CRANES • DRAGLINES • CLAMSHELLS • BACKHOES • PILE DRIVERS

THE OSGOOD CO. O-G THE GENERAL CO. EXCAVATOR

MARION OHIO

DIESEL, GASOLINE OR ELECTRIC POWERED • ⅜ TO 2½ CU. YD. • CRAWLERS & MOBILCRANES

ALEXANDER FOSTER JR. and JOHN CURTIN SR. were among Warner Company employees cited recently for long-term service records. Mr. Foster, vice-president in charge of sand and gravel production, has been with the company for 30 years, and Mr. Curtin has been on the staff for 25 years.

CURTIS J. HOOPER has been named director of highway planning studies in the Connecticut State Highway Department by Commissioner G. Albert Hill. Mr. Hooper, who has been with the department since 1933, succeeds Roy E. Jorgensen, named deputy state highway commissioner last July.

HENRY L. PIERSON has been elected secretary of the Freeport Sulphur Company. He has been assistant secretary since 1939.

COLONEL HENRY CROWN, chairman of the board of directors, Material Service Corporation of Chicago, was recently elected vice-president and a board member of the Hilton Hotels Corp.

MILTON C. MCCALL, formerly engineer-in-charge of the Johnstown office of the Coal Mine Inspection Division, U. S. Bureau of Mines, has been named supervising engineer of the mine safety station at Birmingham, Ala.

Put Cincinnati conveyor belts on all conveyors for . . .

- Low belt cost per ton conveyed
- Big tonnage carrying capacity
- Long, trouble-free service

Ask for important facts about Cincinnati Conveyor Belts today.

THE CINCINNATI RUBBER MFG. CO.
CINCINNATI 12, OHIO

CINCINNATI CONVEYOR BELTS

C. F. Clausen

The appointment of CARL F. CLAUSEN as manager of the Manufacturing Research Section, and secretary of Subcommittee C of the General Technical Committee, Portland Cement Assn., was recently announced. His headquarters will be at the association's general office in Chicago.

Before coming to the Portland Cement Association Mr. Clausen was assistant to the president of Pacific Portland Cement Company in San Francisco, and was for a number of years associated with F. L. Smidth & Company, New York, in designing and operating equipment and plants for cement and related industries. He holds degrees from the University of Copenhagen and the Royal Polytechnic Institute of Copenhagen.

During World War II Mr. Clausen was appointed technical consultant on the cement industry to the War Production Board in Washington, D. C. He was subsequently made chief of the Non-Metallic Building Materials Section with responsibility for cement, crushed stone, sand and gravel, concrete, concrete products, and gypsum, in which capacity he was administrator of Limitation Order 179 and government presiding officer of the Portland Cement Industry Advisory Committee.

H. V. Fegely

HARRIS V. FEGELY was recently named superintendent of the Monarch Cement Company's operation at Humboldt, Kan., replacing C. P. Mitchell, who has retired.

Mr. Fegely, who has been associated with Monarch since 1935, was made assistant superintendent in 1941, and since August, 1946, he has been works manager in charge of manufacturing activities.

OBITUARIES

PHILIP MOONEY, assistant general superintendent of the Medusa Portland Cement Company, died unexpectedly on November 4, 1947, while at the polls in Cleveland, Ohio. He was 46 years of age.

JAMES E. AUTEN, former president of the Barber Asphalt Company of New Jersey, died at a Bridgeport, Conn., hospital on October 1 at the age of 64 years.

During World War II he served as director of the Machine Tools Division and other sections of the War Production Board. He also acted as a special

adviser on Pan-American affairs to former State Secretary Cordell Hull and as special assistant to Interior Secretary Julius A. Krug.

GEORGE P. HORN, who was formerly superintendent of Cementos Guadalajara, Guadalajara, Mexico, died on August 23, 1947, at Fort Atkinson, Wisconsin.

Mr. Horn had been active in the cement industry for 37 years. For 17 years he was associated with the Longhorn Portland Cement Company of San Antonio, Texas, where he participated in the production of cement for use at Randolph Field. He was also engaged by several other well known cement concerns as chief chemist.

PHILIP WALTER HENRY, a former official of the A. L. Barber Asphalt Company, the Medina Quarry Company, the Pan-American Company of Delaware and other well known industrial organizations, died on November 7 at the age of 83 years.

E. R. MCMILLIN, sales manager for J. K. Davison & Bro., Pittsburgh, Pennsylvania, died unexpectedly on November 17, 1947. He was an active member of the Pennsylvania Sand and Gravel Producers' Association and was also well known in the ready-mixed concrete industry.

CLAUDE J. BRADLEY, former metropolitan agent for the Lone Star Cement Corporation, who in 1939 gave a farewell party to his friends because doctors had given him only a few months to live, died eight years later, on October 11, at Brooklyn, N. Y.

After he became too ill to leave his home, Mr. Bradley conducted his business by telephone from a wheelchair at home. He was 60 years of age.

JOSEPH J. DOROBIS, a tester for the U. S. Gypsum Company since his release from the army a year ago, died on September 29 after undergoing brain surgery. He was 27 years old.

ROBERT A. PRUDEN, who retired in 1940 as district manager of the Lawrence Portland Cement Company, died on October 1 at the age of 67 years.

DR. FURGERSON WATSON, 55, died on November 26, 1947, at his home in Pierce, Florida, after an illness of several weeks. Dr. Watson had been engaged in phosphate mining during his entire professional life.

SIDNEY N. PETERS JR., a vice-president and director of the Lawrence Portland Cement Company, died on November 23 at his home in Summit, New Jersey. He was 39 years of age.

Mr. Peters became associated with the Lawrence Portland Cement Company in 1927, at first in the Philadelphia office and then as a representative in the Connecticut territory. Later he was successively assistant district sales manager in Philadelphia, district sales manager, company sales manager and vice-president.

ALFRED THWEATT STROTHER, sales manager for the Old Colony Crushed Stone Company at Boston, Massachusetts, died on November 8, 1947, at his home in that city. He was 55 years of age.

JOSEPH HODGE, CARL D. MCCULLOUGH AND HENRY CHRISTOPHER, all employees of the Glen Park Lime and Cement Company at its quarry near Glen Park, Missouri, were fatally injured when about 50 tons of limestone fell on them from the roof of a tunnel.

The tunnel had been inspected by a state mine inspector only three weeks before the disaster and had been pronounced safe, as there was then no evidence of breaks or cracks. No reason for the accident could be found by investigators.

JOHN C. SITTERLY, founder of the Western Sand and Gravel Company at Spring Valley, Illinois, died recently at the age of 87 years. He had been ill at a hospital for six weeks.

HOWARD A. GLENN, former president of the Standard Bitulithic Company of New York City, died on November 26, 1947, at his home in West Orange, New Jersey, at the age of 53 years. He had been associated with Standard Bitulithic for 10 years.

Legal Decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

A few days ago a reader wrote as follows: "We have a law suit on our hands. Maybe you can assist us to win this suit. An employee is sueing us for $30,000 damages for an injury he received when a shovel handle broke and the sharp splinter ran through his stomach. What can we do to win?"

The answer to this legal question is very important to all readers. Therefore, we shall briefly review the law. First, this reader can win a favorable verdict if he proves that he had employed competent persons whose duty was regularly and carefully to inspect and repair defective tools furnished workmen. This is so because an injured workman can recover *damages* from his employer for an injury *only* when he proves that the injury resulted from *negligence* of the employer. Hence, if an employer proves that he hired someone regularly to inspect and repair defects in tools, *this* testimony is *sufficient* to convince a jury that the employee's injury did *not* result from the employer's negligence. Failure of an employer to prove these facts will invariably result in the employer being liable in heavy damages

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for an injury caused an employee by defective tools or other equipment which the employer furnished the employee.

For example, in *Southwest Stone Company v. Hughes,* 177 Pac. (2d) 489, the testimony showed facts, as follows: The Southwest Stone Company operates a plant where stone is quarried and crushed. One Tisdell was employed as a driller. His duties required him to operate a drill and to make holes in the face of the rock. Dynamite was placed in the holes and exploded, thereby tearing down and removing rock from the face of the cliff which was approximately 45 feet in height. One morning at about 1:30 a.m. while Tisdell was operating his drill in the face of the rock, the lamp which was furnished to him by the employing company went out. Tisdell started his drill in the dark, and a rock which had become loosened in the face fell, striking Tisdell on the head and fatally injuring him.

Tisdell's dependents sued for damages, alleging the Southwest Stone Company was negligent in furnishing Tisdell with a defective lamp, which act of negligence indirectly resulted in his death.

The higher court decided that if officials of the stone company had regularly inspected the lamp and kept it in repair or removed loose stone from the cliff, Tisdell would not have been killed. Hence the employer's negligence caused Tisdell's death, and since he was receiving $200 per month when killed, the court awarded damages of $25,539, as follows: The pecuniary loss suffered by the widow and children, $20,000; $5,000 for pain and suffering suffered by Tisdell; and $439 on account of the funeral expenses.

Must Prove Damages

According to a recent higher court a seller cannot recover damages from a purchaser who breached a sale contract unless the seller actually proves the exact amount of damages he suffered.

For example, in *Washington Sand & Gravel Company v. Brann & Stuart Company,* 162 Fed. (2d) 826, the Washington Sand and Gravel Company sued a contractor for damages from cancellation of a contract for the purchase of sand and gravel. The testimony showed that the contractor signed a binding contract to purchase 10,000 tons of washed gravel at $1.20 a ton and 10,000 of concrete sand at 70 cents a ton. After only 3,200 tons were delivered the contractor cancelled the contract and refused to accept and pay for the balance. At the time the contractor cancelled the contract the sand and gravel company had the balance 16,800 tons of sand gravel washed and piled in its yard ready for delivery to the contractor.

During the trial the officials of the company testified that the cost per ton for producing both the sand and gravel was 35 cents which gave the company under the contract 35 cents a ton profit on the sand and 85 cents a ton on the gravel. The undelivered balance of 16,800 tons of the sand and gravel was sold by the company to other purchasers for 10 cents a ton above the price the contractor agreed to pay. However, the company officials testified that they had to rewash the sand and gravel before reselling it at the higher price. Since the company did not prove how much it had lost financially the higher court refused to allow the company any damages, saying:

"The damage proof as it stood finally, concerned only the reprocessing of the sand and gravel...Thus it is at least open to grave doubt that appellant (company) suffered any actual loss."

Exempt from Taxation

According to a recent higher court equipment used in a quarry is exempt in some states from sales taxation.

For instance, in *France Company v. Evatt,* 55 N. E. (2d) 652, it was shown that a state law provides that sales tax shall be paid on sales. A clause in the law states that where "the purpose of the consumer" is to use the subject of the sale in the production or processing of tangible personal property, no tax shall be collected.

A company engaged in the business of crushing and selling stone purchased certain equipment used in the transportation of crushed stone. The equipment consisted of shovels, loaders, etc.

In holding that the above clause in the state law exempts all purchasers of quarry equipment from paying the state sales tax, the higher court said:

"Sales of tangible personal property used and consumed in operations consisting of transporting crushed-stone products are sales of personal property used in the production by processing of tangible personal property for sale..."

Stop Sign Law

A driver of a motor vehicle who carelessly enters a street intersection protected by a stop sign cannot recover damage for a resultant collision.

See *Meyer v. Hartford Bros. Gravel Company,* 14 N. W. (2d) 660. Here it was shown that a passenger car was traveling 40 miles per hour on a paved highway protected by a stop sign at an intersection. The driver observed a gravel truck when he was about 40 feet from it, but could not stop and struck the truck.

The driver of the passenger car sued the owner of the gravel truck to recover damages. The higher court held the owner of the truck not liable, saying:

"The evidence in this case shows clearly that defendant's truck entered the intersection before plaintiff's car. Under such circumstances the driver of the truck cannot be said to be negligent."

Also, see *Falspoler v. Kansas,* 170 S. W. (2d) 141, where suit was filed against a street railway company by the owner of a gravel truck to recover damages caused by collision with a street car.

The court held that the driver whose negligence in entering a street intersection caused an accident was legally responsible.

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Custom Note Important

Generally speaking, each state has a statute requiring drivers of motor vehicles to give one-half of a highway for passing. This rule of law is applicable although custom is otherwise.

For illustration, in *Langner v. Caviness,* 28 N. W. (2d) 421, it was shown that two trucks engaged in hauling crushed rock on a road-surfacing project collided in daylight on a dirt road. One truck was empty going to the quarry, up a hill and the other truck was loaded with rock going down the hill. It had been the custom for empty trucks to give the right of way which in this case the empty truck did not do. This court held that the owner of the loaded truck must pay damages to the owner of the empty truck, saying:

"We think the custom cannot be invoked to supersede or nullify the statute."

Also, see *Mann v. Standard,* 129 Neb. 226, where a recognized custom was to signal a left turn by opening the left truck door. The statute required an arm signal. The court held that the custom could not supersede the statute.

$70,000 Damages

Modern higher courts consistently hold that drivers of motor trucks must set flares to warn other drivers of the location of a disabled truck at night time, or be liable for heavy damage allowances.

In *Jacksonville Company v. Carlile,* 15 So. (2d) 443, the court records show that a sand and gravel truck become disabled at night-time, and it was parked on the highway without flares to warn the public.

The driver of another automobile ran into it. He brought suit against the company and recovered $70,000 damages.

Independent Contractor

It is well established that an employer who employs a person to work as an "independent contractor" is not liable in damages for injuries caused by such employee, nor for injuries sustained by the employee, nor for payment of Social Security, Unemployment Compensation and like taxes.

An independent contractor is one (1) who performs work requiring skill; (2) who produces results according to his own means and methods; (3) *who furnishes a part or all of the materials* for doing the work; (4) who is paid *either a gross sum of money or by piece work;* and who is under *no* obligation to work exclusively for one particular employer.

In *Corder v. Morgan Company,* 166 S. W. (2d) 455, it was shown that an employee was employed by a company, and was paid $1 an hour. The men on the job were under his control, and he paid them and kept records and made reports to his employer. This employee used his own automobile to make trips for his employer, who paid all expenses incident to the use of the car.

One day the employee was making a trip in his automobile to the place where he was supervising a job, and he collided with another automobile whose owner sued the employer for damages. The employer contended that he was not liable because the employee was an independent contractor.

The higher court held the employer liable stating that the employee was not an independent contractor because his employer paid him hourly wages.

Taxes Payable

Generally speaking, federal income tax need not be paid on recapitalization. However, this rule of law is not applicable where an income is earned on distribution of debentures.

In *Heady v. Commissioner of Internal Revenue,* 162 Fed. (2d) 699, it was shown that one Harvey was managing and principal stockholder in the Ready Mixed Concrete Corporation. Harvey died and his wife and executor could not sell his stock at a satisfactory price. Therefore, 1,000 new shares of par value of one dollar a share and $135,000 in 7 per cent debentures were issued in exchange of the old no-par value shares. The succeeding manager purchased from the wife and executor the new shares on the installment basis. The higher court held that the estate realized taxable income from distribution of the debentures, notwithstanding that distribution took the form of a recapitalization.

Excavation Liability

Considerable discussion has arisen from time to time over the legal question: Can the owner of property situated adjacent a quarry stop excavations adjacent his property and recover damages although he proves no "physical" damage?

For illustration, in *McIvor v. Mercer-Fraser Company,* 172 Pac. (2d) 759, a property owner sued a sand and gravel company for damages caused by excavation of dirt and gravel in violation of a city zoning ordinance. The property owner alleged that the gravel company excavated up to his land without regard to proper sloping and without providing for adequate lateral support. The property owner also proved that the excavations has caused sloughing off of a portion of his land, and deprived him of the use of a five foot strip on and along his lot.

In holding the gravel company liable in damages, the higher court said:

"The record discloses evidence that appellants (gravel company) were guilty of willfully creating and maintaining a dangerous and deleterious condition on their premises, thereby substantially impairing the use and enjoyment of respondents' adjoining premises. It was not necessary for respondents to show actual physical damage to their property.

Loan Company Breaches Contract

Generally speaking, the users of sand, gravel, cement and other nonmetallic products who contract to construct buildings need loans to finance the construction work. Therefore, considerable discussion has arisen from time to time

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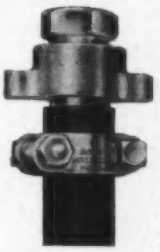

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over the legal question: Can a contractor recover damages from a loan association which breaches an agreement to loan money for construction of a building?

In *Albany Federal Ass'n v. Henderson,* 36 S. E. (2d) 330, it was shown that a building loan association agreed to loan the sum of $16,000 for the purpose of constructing a four-unit apartment building. After the association had furnished a part of this sum it declined to furnish the remainder of the money to complete the building. The contractor sued the association for damages. The higher court allowed the contractor $8,000 damages.

Law Prevails

Modern higher courts consistently hold that when awarding compensation to an injured employee the *intention* of the legislature must be considered.

For example, in *Beard v. Lucky Mines,* 173 Pac. (2d) 76, it was shown that an employee while operating a mechanical rock drill was injured by broken particles of rock violently thrown against his "head and body and into both of his eyes". As a result of the accident, his left eye was so severely injured that it became necessary to remove it. The employee, when injured, was earning $9.25 per day and working six days a week. His average weekly wages were $55.50. The lower court awarded compensation under the State Workmen's Compensation Act based on his usual weekly wages.

No Discretion

When allowing damages for an injury to an employee a jury must strictly use good judgment. Otherwise the award is void.

For illustration, in *Salvato v. New Jersey Asphalt & Paving Company,* 47 Atl. (2d) 286, an employee sued the New Jersey Asphalt & Paving Company for damages for an injury. The jury first awarded the employee $5,000 plus medical, legal and court costs. Then, upon being instructed by the court that they were required to return a verdict in a lump sum, they returned a verdict of $8,500 although the total expenses of medical bills totaled $155. The higher court reversed the verdict, saying:

"The medical expenses in proof were two physicians' bills of $50 and $25, respectively, and a hospital bill of $80, a total of $155."

Liable on Contract

According to a recent higher court a contractor who knows that he is performing work on property *not* owned by the person who employed him must immediately stop all operations.

For instance, in *West Virginia Company v. Frazier,* 195 S. W. (2d) 271, it was shown that a contractor named Frazier contracted to excavate on land supposed to be owned by a party named Clark. Shortly after Frazier began work he discovered that the work was being done on an acre tract which a corporation claimed to own. The parties rechecked their titles and had various conferences in an attempt to settle the dispute. However, Frazier continued excavating. The higher court refused to award Frazier any payment for the work.

Questions and Answers

Legal Editor: We hold a 10-year lease on land. In this lease contract we agreed to pay the land owner 15 cents per cubic yard of "sand and gravel removed from said premises". We did not agree to take any specified quantity of material at any time. Can this land owner cancel this lease since we are not selling enough road gravel business to operate this pit continually? It is an intermittent operation.

Do you consider that the landowner can cancel the lease and keep us from operating the pit as we have done in the past?

Any advice that you can give us on the matter would be thoroughly appreciated. F. D. B. Construction Company.

Answer: I do not believe that the land owner can cancel your lease so long as you do not cause unnecessary waste or damages to the premises, and do not abandon the lease. The contract does not require you to take from the land any specified quantity of material. Of course, if the land owner proves that you verbally guaranteed to remove a stated quantity of sand and gravel per month or year, then he may cancel the lease if you violate this verbal promise.

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TRADE NOTES

Appointment of A. J. Jorgensen as chief mechanical engineer, and F. R. Gruner as mechanical research and development engineer of the Allis-Chalmers basic industries department, and B. H. Puerner as manager of the department's crushing, cement and mining machinery section, has been announced by G. V. Woody, manager of the basic industries department.

G. V. Woody

A. J. Jorgensen

Mr. Jorgensen, who has been associated with Allis-Chalmers for the last 35 years, was named chief mechanical engineer of the crushing, cement and mining section of the basic industries department early in 1946.

Mr. Gruner entered the employ of Allis-Chalmers in 1941. Prior to being named to his new position, he was research engineer in the crushing, cement and mining section of the company's basic industries department.

F. R. Gruner

B. H. Puerner

Mr. Puerner, who has been chief of the application engineering section in the Allis-Chalmers pyro-processing division, joined the company in 1920. In 1921 he was transferred to the crushing and cement machinery department as draftsman. Since then his experience in the department has included the negotiating of foreign installations.

At the annual stockholders' meeting of The Four Wheel Drive Auto Company all members of the board of directors were re-elected. Walter A. Olen was re-elected president for the 38th time at the organization meeting of the board of directors immediately following the stockholders' meeting. Other officers of the company elected were Joseph D. Cotton, vice-president; Donald S.

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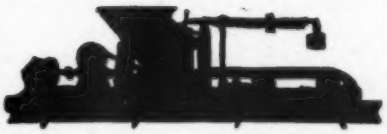
1948



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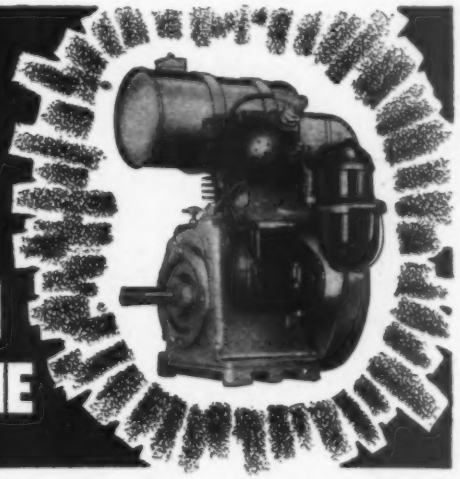

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The Detroit Diesel Engine Division has currently in circulation the first of its mobile service units for operators of General Motors Series 71 diesel engines. The "repair shop on wheels" service was developed to answer emergency calls by sending trained mechanics to the job and to make scheduled inspection calls on Series 71 users.

The first of the units is a Chevrolet ½-ton truck fully equipped to handle all kinds of engine servicing work with the exception of a major overhaul.

Arthur A. Belville, a veteran of nearly 40 years' service with the Bemis Bro. Bag Co. at Boston, passed away after having suffered a heart attack.

A new and improved brake lining, specifically designed for service duty trucks, is announced by The Raybestos Division of Raybestos-Manhattan, Inc. According to Raybestos sales analysts, there are a minimum of 3,300,000 light trucks (trucks of 1 ton, 1½ tons, 1¾ tons, etc.) needing the new product. This vast number of trucks, largely confined to so-called service industries, has generally been overlooked by brake lining manufacturers.

The new Raybestos program specializes in the needs of tough stop-and-go driving of these service industries—lighter service trucks which take neither passenger car lining nor extremely heavy-duty lining.

R. S. Wilson

R. S. Wilson, Goodyear vice-president in charge of sales, was presented with a 35-year service pin at a recent conference for Goodyear field sales representatives. He has been serving in his present office since 1928.

Mr. Wilson's anniversary marked another event, the launching of the sales program for the company's new Super Cushion tire.

The Twin Disc Clutch Company of Racine, Wis., was one of the 209 United States firms mentioned in a recent article in *American Business* which described them as "Our Best Managed Companies."

The appointment of Steve C. Brown as advertising manager of the American Hoist and Derrick Company has been announced by Stanley M. Hunter, vice-president in charge of sales. Mr. Brown assumed his new duties on September 15. During the past three years, he operated his own advertising agency at Bowling Green, Ohio. Prior to that, he was advertising manager of the Cleveland Tractor Company.

S. C. Brown

J. L. Beard

Another recent promotion announced was that of John L. Beard to manager of the Small Products Division of American Hoist and Derrick Company. He will direct sales and merchandising for his division through American Hoist's world-wide sales organization.

The executive committee of the Associated Equipment Distributors met in New Orleans on September 30 and October 1. On October 1 and 2 Region 13 held a conference in the same city.

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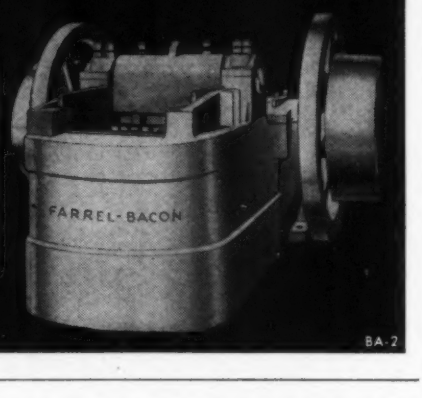

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F. W. Klatt

Frank W. Klatt, formerly general manager of The W. W. Sly Mfg. Company of Cleveland, O., has been elected president of the company, succeeding S. C. Vessy, who died in 1946.

Mr. Klatt previously served as general manager of the Sly company from 1921 to 1927 before going to India for 12 years. During six of these years he represented The General Motors Company as managing director. Upon returning to this country in 1929, he again became general manager for Sly, holding this position up to his election as president.

Elmer W. Noxon, formerly vice-president of the Dixie Machinery Manufacturing Company, St. Louis, has assumed the presidency of that company following his purchase of all of the outstanding stock of the organization. H. H. Storck was re-elected secretary, and J. L. Leykam was elected treasurer.

Simplified methods of quickly determining the efficiency and economics of various types of refractory linings for industrial furnaces are contained in the reprint of a lecture given by the head of the Engineering and Service Department, Refractories Division, The Babcock & Wilcox Company. Copies are available on request to the company's Advertising Division, 85 Liberty Street, New York 6, N. Y.

W. A. Hoffman

The Euclid Road Machinery Company has announced the appointment of W. A. Hoffman as sales representative for the Canadian provinces of Ontario, Quebec, Manitoba and Saskatchewan.

Mr. Hoffman has recently completed an intensive training course at the Euclid offices and factory in Cleveland, O., and has spent considerable time in the field observing the application of Euclid equipment on various types of mine, quarry and construction projects.

Appointment of Franklin M. McCorkel as a district manager for the New Holland Manufacturing Company, Mountville, Pa., was announced recently.

Mr. McCorkel will handle the territory of Ohio, Kentucky, Michigan (except the upper peninsula), West Virginia and Tennessee east of the Tennessee River.

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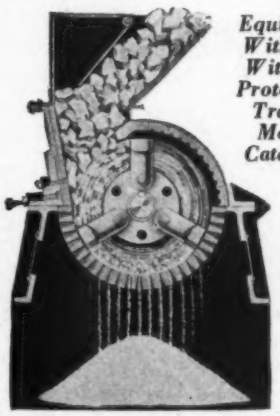

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R. S. Huxtable

Fawick Airflex Company, Inc., Cleveland, Ohio, announces the appointment of Richard Scott Huxtable as executive vice-president and general manager. Mr. Huxtable's career in the industrial field thoroughly qualifies him for his new post.

Prior to this appointment, he was assistant to George W. Codrington, vice-president and general manager of the Cleveland Diesel Engine Division of General Motors Corporation.

Charles M. Bindner and T. A. Oberhellmann recently organized Hammermills, Inc., 1021 Big Bend Blvd., St. Louis 17, Missouri, for the manufacture of a complete line of hammermills for use in the cement and mining industry, feed industry, etc.

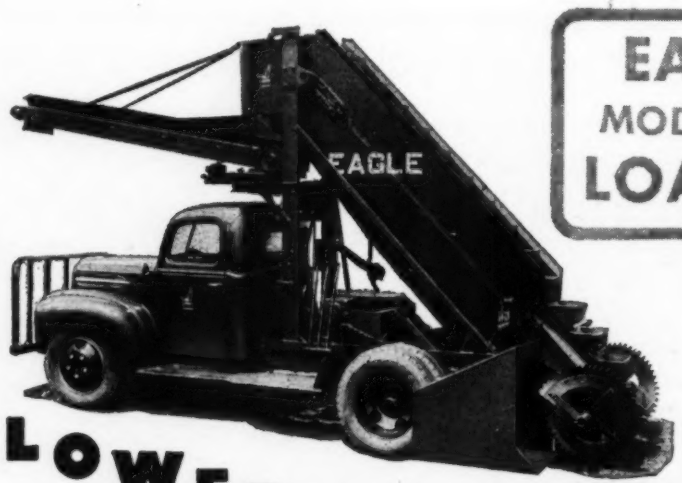
C. M. Bindner, president of the new company was one of the organizers of the Dixie Machinery Manufacturing Co. in 1918, and served as sales manager, secretary-treasurer and finally as president of that company until September, 1947. He was responsible for the development of the Non-Clog Moving Breaker Plate Hammermill, also the double drive hammermill. He personally supervised the installation of these various hammermills for the last 29 years.

T. A. Oberhellmann, vice-president and chief engineer of the new firm, has been in the hammermill business for the past 25 years. In the past five years he served as chief engineer of Dixie Machinery Manufacturing Co., during which time he made many improvements on the moving breaker plate and the double drive hammermill.

This combined experience offers many new improvements in moving breaker plate hammermills, standard hammermills, and a revolutionary double drive hammermill for feed grinding that will control gradation of the product regardless of the moisture. The company will also offer complete engineering service for designing crushing plants and materials-handling systems in connection with crushing plants.

B. H. Johns, for the past seven years manager of the St. Louis branch of Independent Pneumatic Tool Company, manufacturers of Thor portable power tools, has been appointed manager of the company's mining and contractors tool sales division, with headquarters at Chicago, according to an announcement by W. A. Nugent, vice-president. Mr. Johns has been a member of the Thor sales organization for 21 years and served previously as manager of the Philadelphia branch.

W. B. Smith, former manager of the



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Houston branch, will succeed Mr. Johns as manager of the St. Louis branch, and R. F. Caslin, former Thor electric tool service engineer in the Houston territory, has been appointed to succeed Mr. Smith as Houston manager.

E. E. Isgren

Elmer E. Isgren, pioneer member of R. G. LeTourneau, Inc., has been appointed vice-president in charge of production. In his new duties, Mr. Isgren is responsible for all manufacturing operations at the LeTourneau plants in Peoria, Ill., Toccoa, Ga., Vicksburg, Miss., and Longview, Tex. His headquarters will be at Peoria, Ill., where the general offices of the company are located.

Mr. Isgren is also a director of the LeTourneau Corporation and for the last year has been manager of the Longview, Tex., plant.

P. W. Litchfield, chairman of the board of The Goodyear Tire & Rubber Company, said in a review of the first two postwar years in the rubber industry that the tremendous tire shortage of V-J Day would be filled by the end of the year with the price to consumers less than the 1939 (prewar) list price.

In another of his series of "Notes on America's Rubber Industry," Mr. Litchfield noted that his particular field could look back upon a record of brilliant performance for victory.

"A new source of rubber supply had been created and adequate production rates from this source had been achieved in time to avoid national disaster," stated Mr. Litchfield.

The New Holland Manufacturing Company is operating as a subsidiary of the Sperry Corporation of New York City. The former organization will continue as a subsidiary of the New Holland Machine Company. Its policies and methods of operation will continue without change.

During the 100th anniversary celebration of International Harvester at Chicago the firm's officials dedicated its new manufacturing research building at 5225 Western Boulevard.

L. J. Ely

Appointment of factory managers for the diesel engine, diesel track-type tractor, and earth-moving equipment factories of Caterpillar Tractor Co., Peoria, Illinois, has been announced by James R. Munro, general factory manager of "Caterpillar".

Lloyd J. Ely, who has held the position of factory manager,

● This is a scene at the outdoor display of Farquhar equipment at a recent three-day sales convention sponsored by the A. B. Farquhar Company at York, Pennsylvania. William J. Fisher, Farquhar Company president, addressed 1200 employees at the annual banquet held at that time.

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Pages 260 to 275

PIT AND QUARRY

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will head "Caterpillar's" new diesel engine factory, which is currently under construction.

John Elwood will have charge of all diesel track-type tractor production, moving up from a position as assistant factory manager.

John Elwood

A. W. Johnson

Arthur W. Johnson, assistant factory manager, becomes factory manager in charge of the manufacture of such earth-moving products in the company's line as diesel wheel-type tractors, diesel motor graders and cable controls, and the final assembly of bulldozers, scrapers and rippers.

C. L. Vader

The appointment of CLIFFORD L. VADER as assistant general sales manager of the Diamond Iron Works, Incorporated, is announced by Fred Jusenius, vice-president and general sales manager of the corporation.

Previous to entering the Diamond Sales Department in 1942, Mr. Vader spent 11 years with the Rosholt Company as a salesman of roadbuilding machinery. Later he became a partner in the firm of the Theodore Jensen Company.

The staff of the R. C. Call Company of Steubenville, O., marine and industrial distributors for G. M. Series 71 diesel engines, recently held open house to mark the completion of the firm's new sales and service plant. About 600 visitors attended the event and inspected the $90,000 building.

• The R. C. Call Co. sales and service plant.

The State Tractor & Equipment Company of Phoenix has been appointed distributor for The Euclid Road Machinery Co. covering the entire state of Arizona with the exception of Navajo, Apache and Mohave counties.

Clifford N. Peterson has been appointed direct factory representative of the American Hoist & Derrick Company covering the Pacific coast area. His headquarters will be at San Francisco.

• A load of sand or gravel equal to that carried by a small freight car is handled with ease by this dump trailer, which attracted the attention of construction men and builders at the recent Dodge Truck special equipment show in Detroit. Powered by a Dodge "Job-Rated" WRA-65 (3-ton) heavy-duty tractor with 136-in. wheelbase, the Gar Wood hoist and dump body unit on a Fruehauf trailer has a capacity of 19 cubic yards.

C. W. Ballard, assistant manager of Hercules Powder Company's Explosives Department district office in Pittsburgh, has been appointed manager, effective October 1, 1947. Mr. Ballard succeeds John M. Martin, who has been made assistant general manager of the company's Cellulose Products Department in Wilmington, Del.

The appointment of R. J. Stevens as sales manager of Chase Bag Company's Buffalo branch has been announced by Paul Ullmann, Buffalo branch manager.

Nylon is now being used to construct a patented transverse cord breaker, one of the most important features in cord conveyor belt, it is announced by The B. F. Goodrich Company, Akron, O.

The transverse cord breaker is reportedly one of the most vital factors in the ability of the cord conveyor belt to withstand excessive gouging, heavy loading and extremely severe service. It also increases the adhesion of the rubber carcass of the belt to the cover.

Among principal advantages of the use of nylon in this service, the company says, is the higher tensile strength and "stretch" of the cord as compared to cotton, tests showing that it is at least 55 percent stronger.

Rapidly increasing demand for Gardner-Denver products has necessitated the opening of three new branch offices, to be located in New Orleans, Cleveland and Kansas City. These new sales and service offices will bring the total of domestic branch offices to 29. The New Orleans office was opened on September 1, with M. B. Morrisette as branch manager.

The new Cleveland office was opened on October 1 with R. A. Williams as manager; and the Kansas City office on October 15. E. C. Wallace is branch manager at Kansas City.

Stephens-Adamson Mfg. Co., conveyor and ball bearing manufacturer of Aurora, Ill., announces the promotion of A. W. Ostberg, formerly purchasing agent, as assistant manager of the Merchandise Division. Mr. Ostberg will be in charge of the coordination of sales and production of the S-A line of standard box car loaders, car pullers, winches and speed reducers. E. K. Race has been named as the new purchasing agent.

TRAFFIC News Digest

CENTRAL FREIGHT ASSOCIATION DOCKET

Docket 84362 (2)—It is proposed to establish on sand, all kinds, and gravel, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical capacity, actual weight will apply, from Circleville, Ohio to Brewer, Ohio, 72 cents net ton, subject to ExParte 162 and 166 increases.

Docket 84393 (2)—It is proposed to establish on slag (a refuse product of lead or zinc having no commercial value for the further extraction of metal other than iron) in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to fill visible or cubical capacity, actual weight will apply from Burgettstown, Pennsylvania, to Akron and Canton, Ohio, 225 cents; Pittsburgh, Pennsylvania, 135 cents; Youngstown, Ohio, 200 cents, net ton, subject to Ex-Parte 162 and 166 increases.

Docket 84394 (2)—It is proposed to establish on dolomite, roasted, (refractory dolomite, in granular form, treated or untreated, clinkered or burned to a dead state), carload minimum weight 90 percent of marked capacity of car except that when car is loaded to full cubic or visible capacity, actual weight will apply, from Durbin, Ohio, to Decatur, Illinois, 275 cents net ton, subject to ExParte 162 and 166 increases.

Docket 84395—It is proposed to establish on crushed stone, in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Melvin, Ohio, to Minster, Ohio, 138 cents net ton, subject to tariffc X-162-A and X-166.

ILLINOIS FREIGHT ASSOCIATION DOCKET

Docket IRC-511-648—Sand and gravel, carload, from Forreston, Illinois, to Clinton, Iowa. Present 75 cents (subject to X-162-A increase) Proposed 65 cents (or 15 cents per ton).

Docket IRC-511-653—It is proposed to establish on slag, crushed or crushed commercial (not granulated), a product of iron and steel blast or open-hearth furnaces, in bulk, carload to apply in closed equipment, from Chicago, Illinois, to Hillsboro, Illinois. Present—Class rates. Proposed—$2.20 per net ton, subject to X-162 and X-166 increases.

SOUTHWESTERN FREIGHT BUREAU DOCKET

Docket 43562—Sand, gravel and crushed stone, Tulsa, Oklahoma, to Haywood, Oklahoma. Cancel rate of 102 cents per ton of 2,000 pounds, as shown in Item 1070 of Southwestern Lines Tariff 162-T and permit rates in Item 1730-B Southwestern Lines Tariff 162-T to apply.

SOUTHWESTERN FREIGHT BUREAU DOCKET

Docket 43587 (1)—It is proposed to establish commodity rates on sand, molding, as described in Item 720 of Southern Freight Tariff Bureau Tariff 388-G, from Tishomingo, Mississippi, to points in Southwestern Territory. Rates shown below:

	Cents per ton of 2,000 lbs.
Ft. Smith, Ark.....	254
Shreveport, La.	276
Tulsa, Okla.	304
Dallas, Tex.	315

WESTERN TRUNK LINE NEW APPLICATIONS

Docket E-41-902—It is proposed to establish rates on limestone, ground or pulverized, unburned, carload minimum weight 60,000 pounds, from Cannon, Hannibal, Louisiana and White Bear, Missouri, and Marblehead, Pearl and Quincy, Illinois, to Ludington, Michigan, 303; Rockport and Cannelton, Indiana, 270, being proposed rates in cents per ton of 2,000 pounds, subject to authorized increases.

Docket E-41-898—Supplement 1—Ground or pulverized limestone, minimum weight, closed equipment, marked capacity of car. Proposed—Refer to Application E-41-898 dated October 13, 1947, and change the commodity description shown therein to read as shown above.

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3/8 to 40 Cu. Yds.

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Where else can you find a bucket which is lightweight, yet as durable as a Hendrix? Designed by men with "know-how" in the dirt-moving field, and built by men of experience, the Hendrix Lightweight is your best bet FOR BIGGER PAYLOAD PROFITS WITH LOW-COST OPERATION.

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- ★ **20% to 40% lighter than other buckets, type for type.**
- ★ **All welded construction for greater strength and durability.**
- ★ **Manganese Steel Chains, fittings, and reversible tooth points.**
- ★ **Full Payload every trip, even in wet digging.**
- ★ **Perfect Balance; handles easier, fills faster, dumps cleaner.**
- ★ **Three Types: light, medium, and heavy duty. with or without perforations.**

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NEWS OF CONCRETE MANUFACTURERS

A. C. Butterworth, Head Of General Material Co. For 22 Years, Succumbs

Asa C. Butterworth, president of the General Material Company, St. Louis, Missouri, died at his home in St. Louis on November 5. He was 66 years of age.

Mr. Butterworth received his engineering education at Dennison College. In 1910 he organized the Southern Construction Company at Little Rock, Arkansas, which specialized in river protection and revetment work. Later he was a partner in the Miller-Butterworth Corporation of Little Rock, which handled

Asa C. Butterworth

extensive construction work in the southern Mississippi Valley area. In 1925 he moved to St. Louis, and shortly thereafter organized the General Material Company, which has specialized in the production of ready-mixed concrete since 1927.

Dr. Scripture Decorated By France for Wartime Service

Dr. Edward W. Scripture Jr., vice-president in charge of research, The Master Builders Co., recently was decorated with the "Palmes Academiques" by the French ambassador, M. Henri Bonnet, on behalf of the French Government.

A civilian decoration, this award was presented to Dr. Scripture "for services rendered to science", and resulted from his participation during World War II in a scientific congress held in Paris at which he gave a paper on "Cement Dispersion". (Dr. Scripture was at that time a colonel in the United States Army Corps of Engineers, having served over three years in the European Theatre.)

Cement dispersion, discovered by The Master Builders Co. research laboratories, applies the well known dispersion principle to portland cement through use of a derivative of lignin. This development,

Dr. Edward W. Scripture

introduced 15 years ago as Pozzolith, greatly improves all plastic and hardened properties of concrete and mortars.

Coming Events

January 12-16, 1948—Cleveland. Second National Materials Handling conference and exposition, Public Auditorium.

January 21-23, 1948 — Cincinnati. 18th annual convention and exhibit, National Ready Mixed Concrete Association, Netherland Plaza Hotel.

February 23-26, 1948 — Denver. 44th annual convention and exhibits, American Concrete Institute, Shirley-Savoy Hotel.

February 26-28, 1948—Roanoke, Va. Annual convention, Sand-Lime Brick Association, Roanoke Hotel.

March 1-3, 1948—New York. Annual convention, National Concrete Masonry Association, Hotel New Yorker.

March 11-13, 1948—New Orleans. 40th annual convention, American Concrete Pipe Association.

New Addition Soon to Open At Plant of Deschutes Concrete Products Co.

An addition to the building of the Deschutes Concrete Products Company at Redmond, Oregon, is scheduled to open in the immediate future for the production of concrete pipe. The addition is topped with a roof of pumice block for insulation and fire protection. It will accommodate three 16- by 52-ft. steam curing rooms, offices and a machine shop.

The company will turn out culverts and irrigation and drain pipe, in addition to pumice block and brick. Chester Lackey is the owner, and Keith Parkinson is plant manager.

Concrete Silo Stave Firm Now Producing Line of Block

Plant design which permits a quick changeover from the production of concrete silo staves to concrete masonry block has resulted in the addition of a new line to the products of the Lynden (Washington) Concrete Stave Silo Company. Because the plant's big mixer can be used interchangeably with the stave machine and the block machine, only a few minutes are required for shifting from one operation to the other.

C. E. Spaan is plant manager, and Jerry Eshuis and I. Groen are foremen.

Indiana Firm Equips Plant For Production of Dunbrik

Equipment and machinery for the production of Dunbrik has arrived at the plant site of the Versailles Dunbrik Company at Osgood, Indiana. A plant will be erected at once, according to Harry Benham and Burgess Arney, partners of the firm. The first brick made will be used to build the new structure.

Stone to be used for the brick will be quarried and crushed by the Karl Cord Company, whose facilities are across the road from the Dunbrik site. Three sizes of brick will be made.

At the East End Coal & Cement Products Company, Winona, Minn., both concrete and cinder block are made in the firm's recently completed plant. As soon as additional machinery has been installed, other types of concrete products will be added.

Claussen, Olson & Benner, Inc., manufacturers of cement blocks at Holdrege, Neb., have started production of cement block homes in Holdrege; and construction of ten concrete houses to introduce the new line is now getting under way.

Spokane Firm Operates Two Concrete Pipe Plants At Alaskan Air Fields

Between May and October last year 26 employees of the Spokane Concrete Pipe Company of Spokane, Washington, set up and put into operation two complete pipe-making plants in Alaska. Pipe ranging from 6 to 42 inches was manufactured for draining the government's airports at Anchorage and Fairbanks.

According to Carl Warren, company president, some of the equipment went north over the Alcan highway, some by boat and still more by air. The Spokane firm worked under the prime contractor, Birch, Johnson & Lytle. In addition to the pipe, concrete block was also produced at the two plants for use in the construction of permanent government buildings.

The work week during the short summer season is six 10-hour days. Mr. Warren stated that the same crew plans to return to the unfinished job in May of this year.

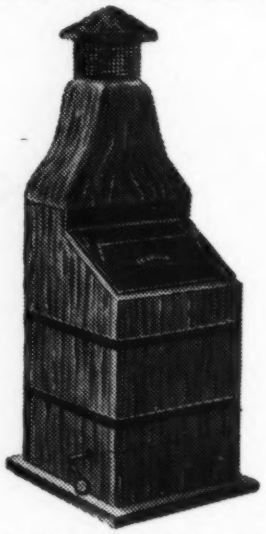
Newly-Equipped Florida Plant Produces Plasti-Crete Block

The Gandy Block and Supply Company of South Melbourne, Florida, has been re-equipped and is now in full production, according to the owner, Paul Gandy. Mr. Gandy purchased the business, formerly known as the Melbourne Industries, from George Maxwell.

Not only new equipment, but also a new process is used to make concrete masonry block. Instead of utilizing coquina rock and beach sand, Mr. Gandy employes Alabama pea gravel and washed, graded sand. The process will be the Plasti-Crete method, for which Mr. Gandy has obtained a franchise. Purchase of a second machine is contemplated.

Incinerators, Barbecue Pits Found Profitable Products

Currier's Enterprises, 4303 San Fernando Rd., Glendale, California, has been highly successful in the concrete-products business with but a single line—concrete incinerators and barbecue pits.



Popular concrete incinerator.

The special vermiculite linings used are fire resistant and prevent cracking. The company licenses firms and individuals to produce the entire line, supplying the special machined concrete forms and selling helps. A small royalty fee is charged. More than 30,000 Currier units have been produced and sold.

Wisconsin Products Assn. Schedules 27th Annual Meeting for Jan. 29-30

The 27th annual convention of the Wisconsin Concrete Products Association will be held in Milwaukee at the Pfister Hotel on January 29 and 30.

Officers and directors of the association are as follows: William P. Siegert, president; Elmer Strong, first vice-president; Glen Moul, second vice-president; Harry Sorenson, treasurer; A. W. Devos, secretary; H. Loucks, William Schneider, Otto Ladwig and A. VanEss, directors.

L. J. Johnson Among Winners In Lincoln Foundation Contest

L. J. Johnson, construction engineer and sales manager for the Limestone Products Company, Menominee, Michigan, was recently awarded a prize in a contest sponsored by the James F. Lincoln Arc Welding Foundation.

Mr. Johnson's paper contained a description of repairs on the blades of a concrete mixer, which were faced with manganese by arc welding.

Manufacturer Announces Sand-Faced Concrete Unit

Emil Wittke of St. Helens, Ore., has developed a concrete block which he claims will effect material savings in home building. The unit is the conventional block, but it is given a coat of white sand and cement, applied with a brush. The manner of fitting the blocks together produces the effect of shingling. Mr. Wittke expects to patent his process if no similar patent has been previously granted.

• More than 100 members and guests of the National Association of Silo Manufacturers met at the Palmer House in Chicago for the organization's annual convention on December 1 and 2. During the two-day session the group discussed industry problems and were addressed by competent guest speakers on such subjects as sales promotion, profit-sharing in industry and sealing silage surface ceilings. One of the features of the program was the world-premiere of a sound-color movie prepared by the B. F. Goodrich Company and entitled, "Rubber Lends a Hand." Although the membership of the association includes manufacturers of all types of silos, the increasing importance of concrete stave construction has brought more than half the group into the concrete products field, and there are clear indications that this trend will continue for some time to come.

Ready Mix Output in 1947 Reaches Peacetime High of 20 Million Yards

By WILLIAM M. AVERY

ALTHOUGH construction activity during 1947 fell somewhat short of its advance billing, the year was nevertheless a good one for producers of ready-mixed concrete. Preliminary estimates indicated that total production during the year amounted to approximately 20,000,000 cubic yards, an increase of 1,000,000 cubic yards over 1946. At the start of the year there had been hope in some quarters that output might come closer to 1942's record-breaking 24,000,000 cubic yards, but material shortages and fantastically inflated costs had thrown a monkey wrench into the building program. All things considered, the actual performance was astonishingly good, and it plainly indicated that an increased proportion of total concrete construction volume consisted of ready-mixed concrete. Since ready-mixed concrete can be used advantageously on more than 60 percent of all concrete construction work, the field is still far from being saturated. The ready-mix industry was already consuming more than 15 percent of the nation's total output of portland cement, and 25 percent of all cement utilized in construction was being marketed as ready-mixed concrete. For all practical purposes there seemed almost no limit to the industry's potentialities for growth. Many observers thought that in a few years production could readily soar to 50,000,000 cubic yards annually.

There were many imponderable factors involved in the immediate outlook for 1948. High building costs were unquestionably acting as a brake on construction activity in the closing months of 1947, and there was certainly no reason to believe that the trend would reverse itself in the very near future. Notwithstanding this major cloud on the horizon, ready-mixed-concrete producers were inclined toward optimism. Replies to a survey questionnaire sent out by THE CONCRETE MANUFACTURER in December indicated that almost half of the nation's ready-mix producers expect their volume of business in 1948 to show an increase. Their estimates ranged from 10 to 30 percent, with 20 percent representing a fair average. Except for a handful (about 2 percent) of pessimists who thought there would be a drop, the others all expected business to be at least as good as it was in 1947. Since these estimates were based upon intimate knowledge of local conditions affecting construction, they probably offered as good an index as any of the overall national picture. The survey also revealed that many producers are planning expansion programs, another sure indication that the industry's morale was in good shape.

The shortage of cement caused some distress among ready-mixed-concrete producers during the closing months of 1947, but generally speaking the situation was much improved over 1946. Since the industry is the nation's largest user of cement (the concrete masonry industry runs second), it was probably receiving some preferential treatment. Rising freight rates were making it extremely difficult for some mills to ship into certain areas and still meet area prices, a factor which was unquestionably aggravating the shortage problem. Faced with the alternative of stopping shipments into such areas altogether, some mills contemplated making shipment on a "plant price plus freight all the way" basis. If the railroads received the full 27 percent boost they are asking for, this practice might up the cost of cement 80 or 85 cents per barrel.

On the technical front 1947 was a rather unexciting year. Plant practice and quality control underwent refinement on a wide scale, but there were no really outstanding developments in either category. There was some expansion during the year in the use of non-agitating equipment for hauling air-entrained concrete, but rapid development of this technique seemed still to hinge upon revision of existing specifications. There were some encouraging indications that A.S.T.M. specifications

• What might be called the "new look" in ready-mix plants is exemplified by Arrow Sand & Gravel Co.'s new Sandusky Street plant at Columbus, Ohio.

might soon be overhauled in this regard. The use of non-agitating equipment had one outstanding victory to its credit: plant-mixed concrete was now being produced and sold by at least one operator within the city limits of Chicago.

In the field of safety the industry made an important forward step during the year. The National Ready Mixed Concrete Association's first annual safety competition was completed in June, and trophies were scheduled for presentation at the industry's meeting in Cincinnati this month. Two classes of competition had been set up—Class A for companies with annual production in excess of 20,000 cubic yards, and Class B for companies with annual production of less than 20,000 yards. The winners in the 1946-47 competition were Frank J. Knight Co., Centerline, Michigan (Class A), and The Grand Junction Building Materials Co., Inc., Grand Junction, Colorado (Class B). The trophies were to be provided by PIT AND QUARRY, and formal presentation was to be made by Harry F. Thomson of the General Material Co., St. Louis. It was hoped that eventually all the association's member companies would take part in the competition. With accidents costing the industry from 3 to 5 cents per cubic yard of concrete delivered, there was a tangible need for concerted effort on the problem of safety.

Although a fair number of new plants were constructed during 1947, the majority of expansion programs were carried out by improving and expanding existing facilities, and by the purchase of additional truck mixers. Larger truck fleets (and larger trucks) seemed to be the order of the day. Before the war a PIT AND QUARRY survey indicated that the average ready-mixed-concrete plant operated a fleet of 8 trucks. By the close of 1947 the average was in all probability not less than 15 units per plant.

Due to a fairly high truck replacement rate throughout 1947, the average age of equipment declined somewhat, but it was still uncomfortably high. One result of the definite trend toward larger and heavier equipment was an increase in "rear end" failures. A survey carried out by the association's Committee on Truck Chassis established rather definitely that producers find the standard differential and axle inadequate for present-day loads. A study of current truck chassis in the field showed that up to 88 percent of the gross loads is being borne by the rear-axle assemblies. Special designs seemed to be the only solution to this problem, and the industry planned to carry its plea directly to the nation's leading truck manufacturers.

By almost any yardstick of comparison, the ready-mix industry could face the year 1948 resolutely and confidently. In the fields of merchandising, customer service and quality control there was still room for considerable improvement, but producers were showing a far greater awareness of such problems than ever before. Their association, under the able leadership of Vince Ahearn and Stanton Walker, was lending invaluable assistance on these and related fronts, and never in the industry's entire history was there such complete assurance that steady progress would be made. Representing almost 75 percent of the nation's ready-mixed concrete capacity, N.R.M.C.A. now spoke with authority for a united industry—and for an industry which had firmly established its product on the basis of quality, economy and availability.

• Above, right: Compactness and simplicity are the features of this new ready-mixed concrete plant of the Arizona Sand & Rock Co. It is located near Phoenix.

• Right: J. A. Nicholson of Toledo, Ohio, developed this special dump body for delivering air-entrained concrete. It incorporates a baffle plate and an angled cover plate which forces the concrete to act as its own scouring agent, insuring clean and complete discharge.

Converted Schoolhouse Used For Kolorcrete Block Plant

A new venture in concrete block making has been launched at Chambers, Washington, in an old country schoolhouse which is also used as a wheat seed processing plant. O. G. Lee and his son, O. G. Lee Jr., have added concrete blocks to their processing business.

Block and brick of both lightweight and standard types are made in a variety of colors through the Kolorcrete process.

'47 Output of Concrete Pipe Continues Upswing; May Total 6,000,000 Tons

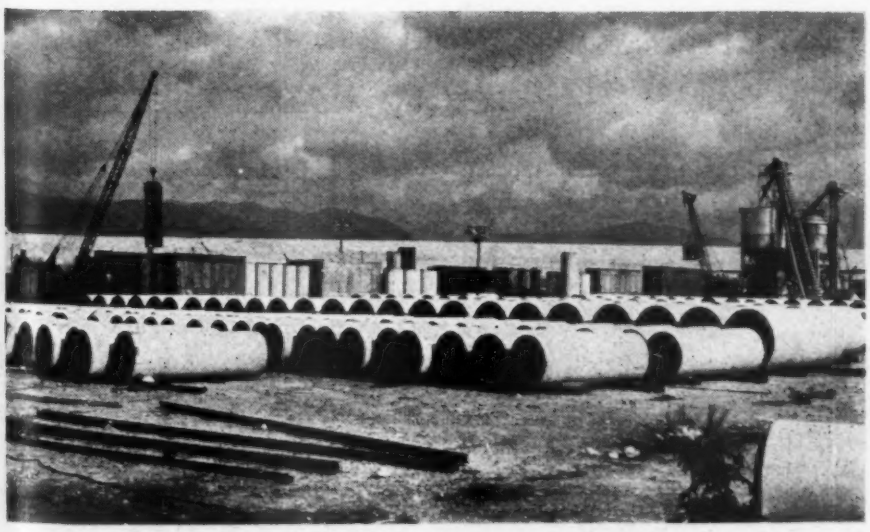
ACCORDING to the best available sources of information the 1947 output of concrete pipe (including farm drain tile, culverts, sanitary sewers, storm sewers, irrigation and pressure water supply) was somewhere in the neighborhood of 6,000,000 tons. Just a year ago, in reviewing the 1946 performance of the industry, we pointed out that pipe manufacturers were still engrossed in digging their way out of the depression which followed the 1942 war construction boom. It seems clear now that the digging out process was somewhat further advanced by the close of 1946 than was supposed, and that in 1947 the industry in general produced at levels well above the "break-even" point.

Production of all sizes and types of concrete pipe in the year just closed was probably 20 percent greater than in 1946. Better accounting systems within the pipe industry, coupled with excellent work on the part of the Census Bureau, now strongly indicate that actual production has been over a period of years consistently and materially higher than estimated. For example, output in 1942 (the pipe industry's peak year) has generally been estimated as 4,000,000 tons, whereas evidence gathered in the past year strongly indicates that it must have been not less than 7,000,000 tons. Accepting the 1942 output as a yardstick of what the pipe industry is capable of producing, the 6,000,000 tons turned out in 1947 represented a strong comeback from the wartime low, and there seemed good reason to believe that the rise would continue well into 1948.

Production in 1947 was well distributed in respect to major uses. A significant gain was noted in the output of sewer pipe, a market which had been neglected during the war partly as a result of the high demand for larger diameters and partly because price ceilings had squeezed all the profit out of small-diameter pipe. Geographically the boom (if it could properly be called a boom) was most clearly evident in the far West and the deep South, where practically all major producers were operating at full capacity.

• Left: High-speed, low-amplitude vibrators were successfully used in producing poured pipe for the San Diego Aqueduct. The air-powered vibrators were mounted on shelves welded on opposite sides of the outer forms, about 5 feet from the base.

• Below: During 1947 two Los Angeles concerns produced 225,000 tons of concrete pipe for the 71-mile San Diego Aqueduct. Some of the pipe sections are shown in the yard of the United Concrete Pipe Corp.



Few new plants were built by the pipe industry during 1947, but despite this, overall capacity probably increased by as much as 20 percent. The increase could be largely attributed to improvement programs which were carried out during the year by virtually every important producer in the industry. For the most part improvements were directed at increasing labor efficiency—a sure sign that the industry had profited from its rather bitter experience during the war. Power lift-trucks replaced hand buggies in a number of plants, and even relatively small producers installed modern materials-handling systems as a substitute for shovel-and-wheelbarrow methods. Elimination of back-breaking labor attracted better men throughout the industry, and this in turn unquestionably resulted in a further increase in productive efficiency.

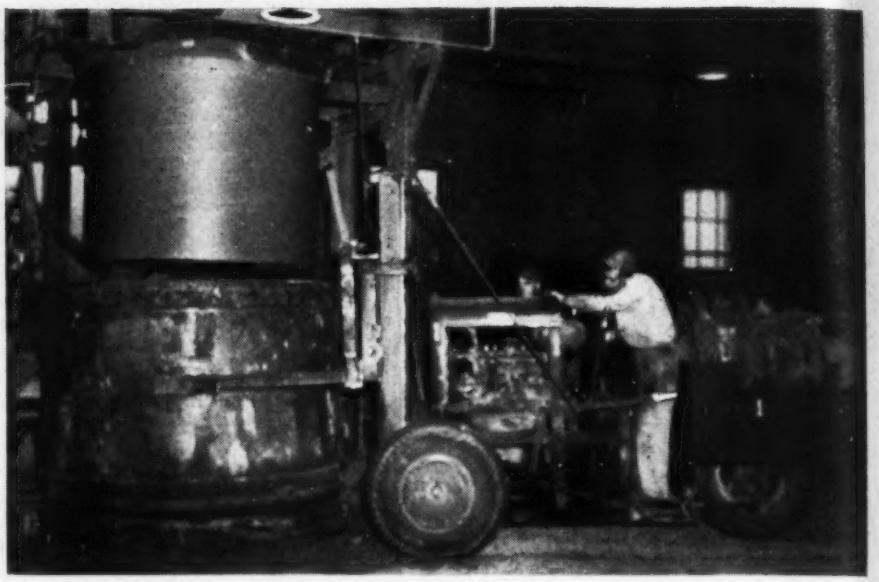
There were no radical innovations in plant practice during the year. In the North a significant number of producers installed modern steam curing facilities, and it was a fair guess that steam curing would soon become the general practice in cold climates. High-speed, low-amplitude vibration was successfully used in making poured pipe for the San Diego Aqueduct, and vacuum processing was reportedly receiving its first large-scale test on a project at Oklahoma City. Both of these techniques apply to poured pipe, and are said to produce concrete of high initial strength and excellent surface appearance.

Construction was started in 1947 on several new plants for the manufacture of centrifugally-cast pipe by the Prosser and the Hume processes, but packer-head and machine-tamped pipe will continue to account for the lion's share of output in the United States. The renewed interest in centrifugal processing could be directly attributed to the wider acceptance of concrete pipe for pressure service. Three out-

standing pressure pipe jobs were completed during 1947—an 80-mile stretch into Saginaw, Mich., and two 40-mile sections, one into San Diego, Calif., and the other into Salt Lake City. These installations and a great many smaller ones offered conclusive proof of the strides which concrete pipe has made in the pressure field.

In its program for 1948 the American Concrete Pipe Association planned to channel a considerable part of its efforts into problems concerned with research and sales promotion. Definitely scheduled are full-scale hydraulic studies of 18-, 24- and 36-inch-diameter culvert sections each 200 feet long. Also planned are extensive load tests on various sizes of concrete pipe under minimum cover conditions. The latter project will seek to develop factual design data to replace the present almost wholly arbitrary standards. Other research activities in prospect for 1948 include a $10,000 testing program by the Vicksburg office of the Corps of Engineers and an extensive investigation of culvert entrance structures by the Highway Research Board.

In the sales promotion field A.C.P.A. during 1947 had set up a personalized advertising service, permitting members to send photographs and copy to the Chicago offices for preparation of advertising leaflets at cost. This was done as part of a broad effort to encourage pipe manufacturers to widen their markets during these relatively prosperous times. The association has planned to devote considerable time to sales techniques at its 40th annual convention in New Orleans, March 11-13.

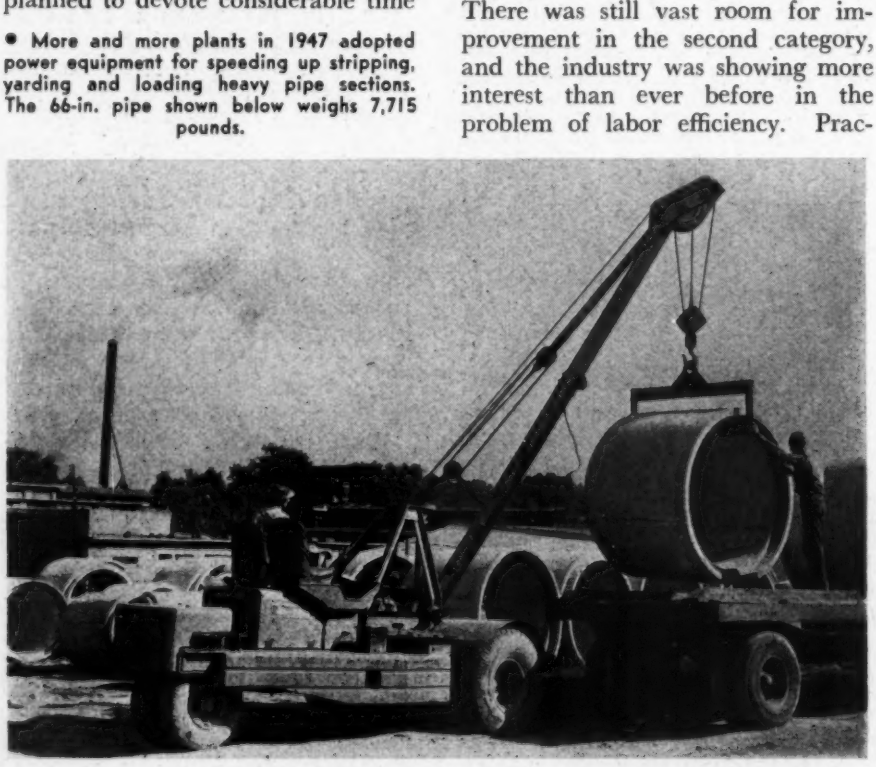


• Throughout the concrete pipe industry in 1947 there was great interest in labor-saving machines. Many producers replaced hand buggies with power lift trucks of the type shown above.

From the point of view of profits, the concrete pipe industry in general fared far better in 1947 than in 1946, when low price ceilings were still in effect. Price advances during the year seemed to average out at about 10 percent, an amount barely sufficient to cover wage increases and other rises in the cost of doing business. The fact that most companies operated in the black during 1947 could be largely attributed to two factors: increased volume and a significant step-up in output per man-day. There was still vast room for improvement in the second category, and the industry was showing more interest than ever before in the problem of labor efficiency. Practically all companies have planned to install labor-saving equipment of some description during 1948.

The pipe industry faced the new year with considerable assurance; its house by and large was in good order, and there was every possibility that total volume in 1948 might soar as high at 7,000,000 tons. If the widely-predicted slump came during the year, it was virtually certain that public works would quickly take up the slack.

• More and more plants in 1947 adopted power equipment for speeding up stripping, yarding and loading heavy pipe sections. The 66-in. pipe shown below weighs 7,715 pounds.



New Equipment to Expand Output of Washington Plant

Extensive improvements involving the investment of approximately $35,000 have been made recently at the Walla Walla Concrete Pipe Company's plant at Walla Walla, Washington.

A new automatic block machine will produce 600 units per hour, either lightweight (pumice) or standard. A choice of three sizes is available. The equivalent of four carloads (3500 cubic feet) of sacked cement can be stored in the new bulk cement bin installed within the last weeks.

James F. Roose has been added to the sales organization of the Cement Products Division of Cataphote Corporation, Toledo, O. Mr. Roose's activities will be concerned with the sale and marketing of Darex AEA (air entraining agents), distributed by Cataphote Corporation in Michigan, Indiana, Ohio and Kentucky.

Barney & Dickenson, Inc., Vestal, New York, has put a new ready-mixed concrete plant into operation. The firm also handles sand and gravel and makes cinder blocks.

Production Line Technique Employed At On-the-Spot Aqueduct Pipe Plant

another ON THE SPOT report

APPROXIMATELY 170,000 feet of 67- and 68-in. welded steel pipe, lined with portland cement concrete, rod wrapped, and coated with portland cement concrete, has to be laid by the American Pipe & Construction Co. on the second Mokelumne Aqueduct near Pittsburg, California.

Shortly after the project got under way, the company decided that if they were to meet the time schedule they would have to eliminate hand labor in the preparation of the pipe. So they ordered two batching plants from the Noble Co. of Oakland, California, and prepared to place the lining, wrapping and coating operation on a production line basis.

The two batching plants, complete with 1,000-cu. ft. round bulk cement silos, bucket elevators for cement, bottom-dump track hopper and 1-cu. yd. weigh batcher, were fabricated at the Noble Co. plant and shipped knocked-down to the American Pipe & Construction Co. operation at Pittsburg. When operations ceased on the evening of July 3 for the long Independence

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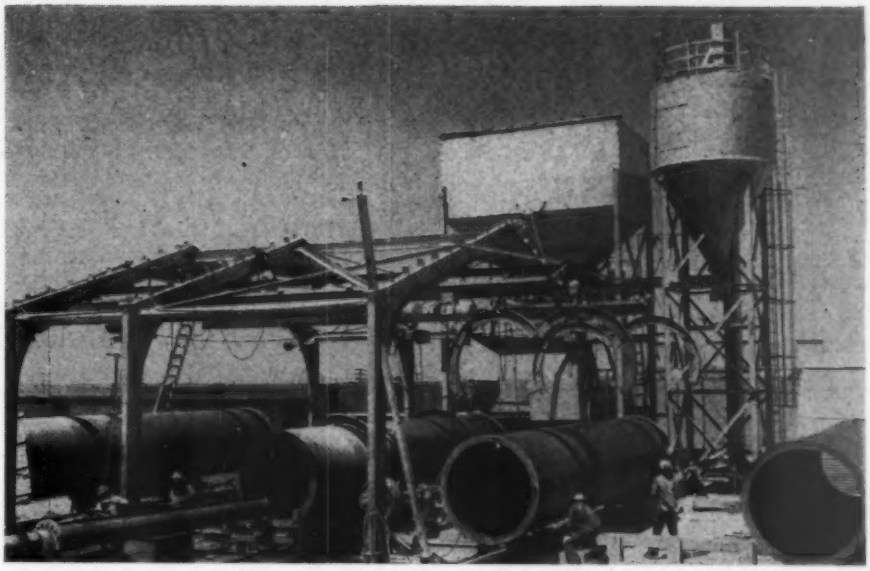
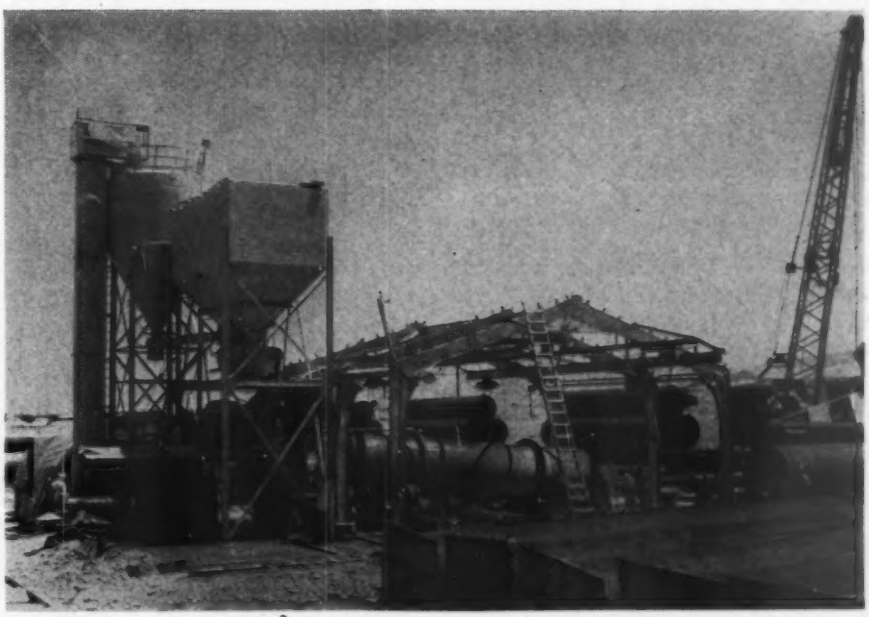
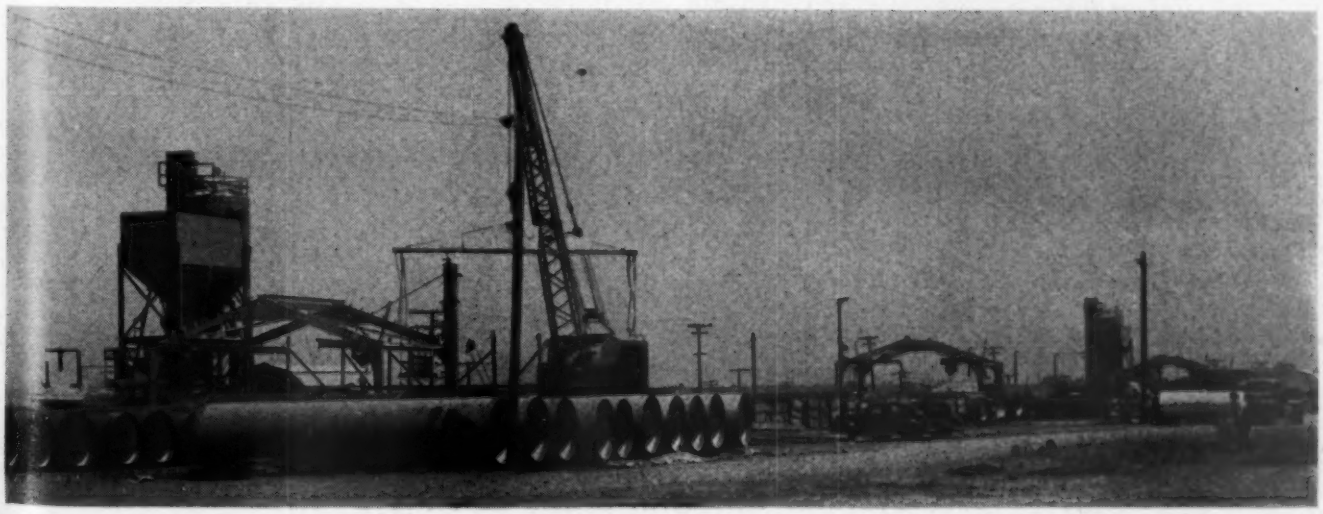






• Right, above: Pipe is lined with concrete at this batching plant, operated by the American Pipe & Construction Company near Pittsburg, California. The lining is accomplished by means of the feeder tube in the left foreground.
• Right: The pipe comes from the lining operation and is placed under a sprinkling setup for curing the inside concrete lining.
• Below: An overall view of the production line. The pipe is concrete-lined at the batching plant (right background), rod-wrapped at the framework (right center) and concrete-coated at the batching plant (left center).

Southeastern N.C.M.A. Group Meeting At New Orleans Draws Large Crowd

Well Balanced Program Covers Sales Promotion, Modular Coordination and Technical Problems

another ON THE SPOT report

SIXTY-ONE producing plants located in 23 states were represented at the Southeastern Regional Meeting of the National Concrete Masonry Association held at the Hotel Roosevelt in New Orleans November 10th and 11th. The size of the gathering (more than 200 individuals registered) and the enthusiastic participation in the program by all who attended marked another important milestone in the steady growth and widening influence of N.C.M.A. Preceding the two-day program of business and technical sessions, officers, directors and the executive committee of the association held their fall meeting at the same hotel. Included in the program were a number of sightseeing tours for the 54 ladies who attended the meeting.

By WILLIAM M. AVERY

Business Conditions At the opening session representative manufacturers located in various sections of the Southeast reported on general business conditions in the concrete masonry field. On the whole a most optimistic picture was presented, most producers reporting continued high demand and no immediate prospect of sharp cutbacks. A few localities reported some distress in respect to cement supply, but even in this category the overall picture was considerable brighter than it was a year ago. One significant sign of the times was a statement by a Houston, Texas, producer that in the past year the number of block plants in that city has shrunk from 46 to 7. A few localities reported encountering increased competition from clay products.

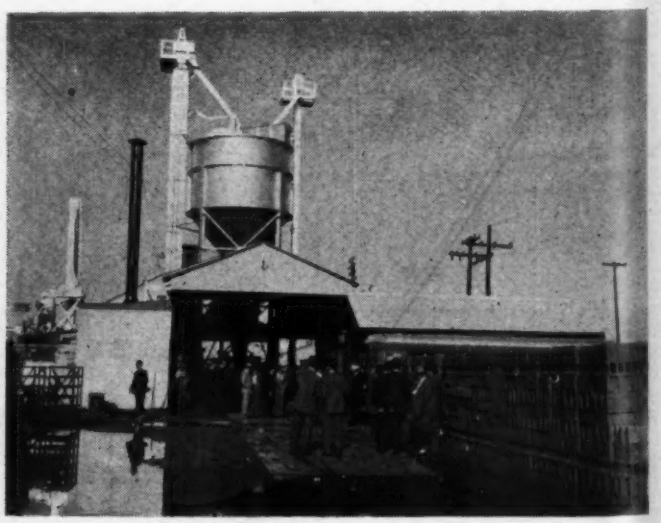
Sales and Credits The subject of sales and credits was competently presented by Perce Clement, accountant for Katterjohn Concrete Products Co. of Paducah, Ky. Mr. Clement pointed out that since the concrete masonry industry cannot package its product, it is of the utmost importance that plants be kept clean and attractive. An obviously efficient plant can help a great deal in overcoming sales resistance. In addition, he said, every company in the industry must help create demand through the media of newspaper and radio advertising and direct, personal solicitation. He urged the employment of salesmen even when output can be sold without solicitation, pointing out that future good will and acceptance can be won by offering adequate service to customers.

In regard to credits Mr. Clement referred to the sharp increase in credit sales in all parts of the country, and he urged block manufacturers to keep a close watch on their accounts receivable. According to the speaker the ratio of cash to credit sales showed a drop of 25 percent in the first 9 months of 1947 as compared with the same period in 1946, and there are indications that the trend is continuing. It therefore becomes increasingly important, Mr. Clement concluded, for block manufacturers to keep after slow accounts by mail, and to use the service of collection agencies when necessary.

Report from Sweden John L. Strandberg, head of the Concrete Building Units Co., Kansas City, Mo., presented an interesting informal report on his recent study of the concrete masonry industry in Sweden. He told of visiting one concern there which produces 25 million units per year, although the population of the entire country is less than 7 million. In both Norway and Sweden, Mr. Strandberg said, concrete blocks are widely accepted and used for every conceivable type of construction, and as a result the concrete masonry industry is much further developed, relative to population, than it is in the United States.

Mr. Strandberg expressed the opinion that this country has only begun to recognize the possibilities of concrete masonry construction, and that vast markets remain to be developed. If the industry is alert and progressive, he sees no reason

• An inspection trip at the close of the N.C.M.A. (Southeastern Regional) two-day session at New Orleans included visits to two block plants. At Crescent Concrete Products (left) both solid and liquid refreshments were served to the visitors. • Right: the Alatex Concrete Products Plant.



why output should not increase to 2 billion or more units annually.

State of the Industry At the afternoon session of the first day's meeting, E. W. Dienhart, N. C. M. A.'s capable executive secretary, reported on the state of the concrete masonry industry, and outlined the activities of the association in terms of their value to the industry. In general Mr. Dienhart confirmed the reports given earlier on the continued high level of operations throughout the industry. He mentioned the continued growth of the association as one of the best indications that the concrete masonry industry is on a sound footing, and he expressed great satisfaction with the support which member companies are giving to N.C.M.A.'s widening activities in the business, legal and technical fields.

• E. W. Dienhart, executive secretary, and George W. Katterjohn, vice-president of N.C.M.A., talk it over at one of the luncheon gatherings.

Modular Coordination Allan Wallsworth, architect, Milwaukee, Wisconsin, followed Mr. Dienhart with a discussion of the application of modular coordination to concrete masonry construction. Because of the wide interest in this subject and the excellence of Mr. Wallsworth's presentation, his remarks will be published in full in the February issue of THE CONCRETE MANUFACTURER. Among other things, the speaker pointed out that modular coordination probably offers the only effective remedy for the slowdown in building production.

• Below, left: Although a majority of those who attended the meeting represented Southeastern manufacturers, many came from other sections of the country. In this group (left to right): Otto Buehner, Salt Lake City, Utah; T. E. Schwalbe, Wauwatosa, Wis.; Glen C. Barnes, Syracuse, N. Y. • Right: Phil Paolella (Plasticrete Corp., Hamden, Conn.), John Strandberg (Concrete Building Units Co., Kansas City) and Lewis Lloyd (Alatex Concrete Products, New Orleans) go over their notes while waiting for one of the meetings to start. • Bottom row, left: Paul M. Woodworth (The Waylite Co., Chicago), who spoke on recent developments in high-temperature steam curing. • Center: Ben G. Wallis (Florida Portland Cement Co., Tampa) presented a paper entitled "Condensation and How to Beat It." • Right: R. E. Copeland, the association's director of engineering, who discussed N.C.M.A.'s important activities in connection with the industry's technical problems.

Masonry Pictorial John Shaver, editor of *Concrete Masonry Pictorial,* presented an interesting talk on the benefits of using that publication in the direct promotion of sales. He compared the 6,800 circulation of the first issue three years ago with the present distribution of 16,500, pointing out that although the increase was encouraging, many companies were still neglecting to use the *Pictorial* in connection with their sales efforts. The experience of those who have availed themselves of it indicated that the *Pictorial* can be an effective means of convincing architects and builders of the superior qualities of concrete masonry units.

Merchandising As a prelude to the showing of a new P. C. A. sound movie entitled "Better Farm Homes with Con-

• Henry E. Buchholz, president of the association, and Tom Goodbee of Crescent Products, New Orleans.

crete," Hugh Roberts of the association's Farm Bureau urged the block industry to cultivate the farm market more aggressively than it has in the past. Block makers, he asserted, must make it easy for farmers to use precast concrete. He urged local producers to "tie in" with the P.C.A.'s national advertising program by using ad mats prepared and furnished by the association.

Mr. Roberts drew attention to the fact that by virtue of its local character the average block plant has a decided advantage over competitors, since the plant itself is available for inspection and the owners and employees are themselves a part of the community in which the product is sold. He urged block manufacturers to capitalize on this important advantage by developing and maintaining attractive plants and premises.

Condensation The second day's program started off in high gear with a discourse entitled "Condensation and How to Beat It" by Ben G. Wallis, assistant sales director, Florida Portland Cement Co., Tampa. According to Mr. Wallis very few concrete masonry walls actually leak, although improper construction may result in condensation serious enough to be mistaken for leakage. He suggested that one certain remedy for condensation is to substitute double-wall construction, using two 4-inch units with an inch air space in place of the standard 8- by 8- by 16-inch unit.

Shrinkage cracks present an equally serious problem, according to Mr. Wallis, and in this case, he pointed out, the solution seems to be entirely in the hands of the block industry. Wet blocks, Mr. Wallis said, are "live" units, and in drying they may shrink as much as ½ inch. The speaker agreed that there is still no complete solution for the problem of shrinkage cracking, but the difficulty can be greatly minimized by holding water absorption to less than 10 percent. The block industry as a whole must market a certified product capable of meeting all specifications if concrete masonry units are to stay on Main Street.

Technical Problems In introducing the subject of the association's extensive activities in respect to technical problems, R. E. Copeland, director of engineering, drew attention to the fact that the industry's responsibilities are increasing as it becomes a more important factor in building. He referred to the many controversial factors involved in technical problems, pointing out, however, that mutuality of interests overrides all such issues.

In regard to curing, Mr. Copeland mentioned the increasing use of high-temperature steam during the last three or four years, referring specifically to tests conducted by the association at three plants in an effort to determine an optimum cycle. At this point Paul Woodworth, member of N.C.M.A.'s Technical Problems Committee, took over the discussion.

Mr. Woodworth cited the increasing number of large plants in the block industry as an important factor in the rising importance of rapid, thorough curing. He referred to the fact that a number of plants are now using high-temperature steam curing to produce specification block in 24 hours. Tests to date indicate that maximum benefits with high-temperature steam are achieved in the range of 165 to 175 deg. F. and that the rate of rise should not exceed 60 degrees per hour. In any case, according to Mr. Woodworth, the steam should be on for not less than three hours, and preferably for one hour longer than the time necessary to bring the kilns up to the required temperature. A minimum soaking period of 8 hours is recommended, followed by a 3-hour drying period.

With this cycle, Mr. Woodworth pointed out, it is possible in 24 hours to obtain about 93 percent of the 28-day moist-cured strength. In the speaker's opinion high-temperature curing is mandatory for any plant in which it is necessary to load delivery trucks directly from curing racks.

Mr. Copeland, resuming the discussion, called attention to the probability that the association's curing studies, carried out at a cost of only a few thousand dollars, will save the block industry at least $250,000 per year. Another important problem which the industry must study and act upon is the matter of working out the basis for uniform testing. Until this job is done Mr. Copeland feels that the industry will realize only a fraction of the benefits potentially available in connection with testing.

In connection with the trend toward greater plant mechanization, Mr. Copeland suspects that the law of diminishing returns is beginning to function. With direct labor costs now reduced in many plants to 2¼ or 2 cents per unit, he feels that further reduction may prove to be economically unsound.

Cubing According to Philip Paolella, Plasticrete Corp., Hamden, Conn., cubing "is the art of handling units from rack to storage to job economically." In the case of the Plasticrete Corp., Mr. Paolella said, cubing has resulted in greater savings than any other practice instituted at the plant.

His company has found a 48-inch cube to be most convenient, the size being based on a rack of 90-unit capacity. The plant's entire output of 20,000 units per shift can be cubed by four men. Cubes are made up in the plant by hand, the bottom course of all cubes consisting of standard 8-inch units to facilitate subsequent handling by fork trucks. The cubes are loaded for delivery by driving the lift trucks directly onto flat bed trailers from a raised loading dock. By this method 1,200 units can be loaded in from 15 to 25 minutes. Loading costs range from 30 to 50 cents per hundred blocks.

Following the technical session and the formal adjournment of the meeting, about 40 producers joined in an inspection trip covering two New Orleans block plants and the local mill of the Lone Star Cement Co. The block plants visited were Alatex Concrete Products and Crescent Concrete Products.

Workers at the University of California's new 4,000-ton cyclotron are protected from its deadly rays by a 5-ft. wall of concrete it was announced at the 280th session of the American Physical Society at Leland Stanford University. Concrete was selected because of its low cost and because it is less permeable to the high-energy bombardments than such substances as graphite, aluminum and lead.

Among 11 offers received by the War Assets Administration to purchase the Passamaquoddy Tidal Power Project at Eastport, Maine, was that of the Eastern Flexicore Company, Inc., Boston, Massachusetts. The firm offered $203,466 for the facilities, which it would use for the manufacture of concrete pipe and block.

One of the newer industries of St. Joseph, Missouri, is the St. Joseph Wilbert Vault Company. Vaults made by the concern are of concrete and are lined with 210 lbs. of asphalt. Although a vault weighs approximately a ton, it will float, due to its large surface area.

RESORT AREA IS PROFITABLE LOCATION FOR PROGRESSIVE NEW PRODUCTS FIRM

• A general view of the Fox Lake Concrete Products Corporation's plant at Fox Lake, Ill., seen from the blockyard.

another ON THE SPOT report

ONE of the newer small concrete products plants in the Midwest, the Fox Lake Concrete Products Corp., started producing block in March, 1947. The first blocks produced were 4- by 8- by 16-in. partition tile, but with the arrival of additional molds, production was started on an 8- by 8- by 16-in. product. Teofil Piskorz and Wallace Brunner, owners of the corporation, hope to find molds for chimney blocks, garden furniture, and bird baths, so that they may enter these fields. Since Fox Lake is in a resort area just north of Chicago, there is a substantial market for the so-called "garden furniture" line of benches, bird baths and ornaments, for use around the cottages which surround Fox Lake and the many other lakes nearby.

Contractors in the area are anxious to purchase block made from lightweight aggregate, and this has led to the production of some partition tile made with cinder aggregate. So far no lightweight aggregate is available at a price that will permit its use, and consequently all production utilizes pea gravel and torpedo sand (or cinders) as aggregate. The lightweight material is in demand because of the difference in weight of a standard block made with gravel or light aggregate. The greater weight of the gravel block has caused certain labor difficulties in this area.

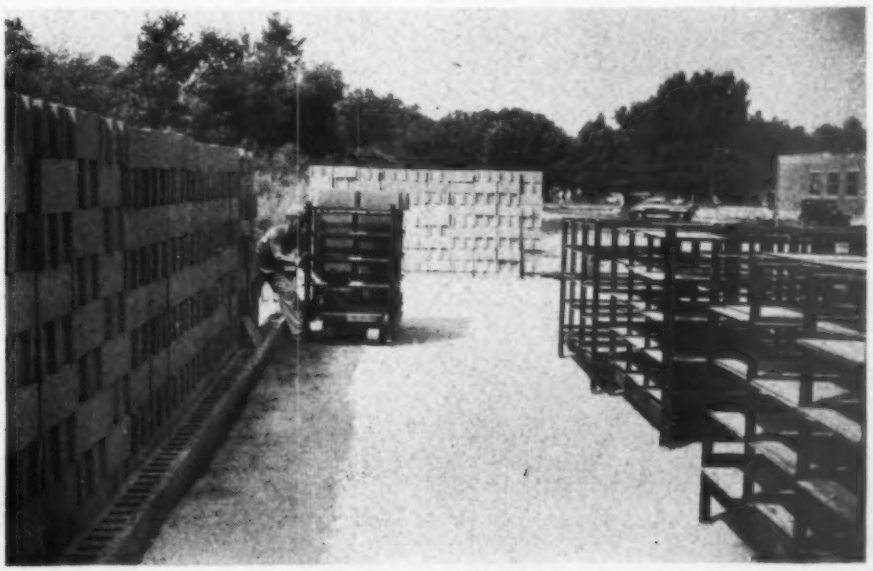
Due to the shortage of steel no aggregate storage bin has been erected at the plant of Fox Lake Concrete Products Corp. Sand and gravel are dumped directly onto the floor of the plant by the dump trucks which deliver this material from the local pit.

Aggregates are then shoveled by hand into the 18-cu.-ft. Dodson-McCord Bowlless concrete mixer. This machine uses interchangeable staves to insure even wear, and spiral blades for fast, thorough mixing. A home-made meter proportions water for each batch of concrete. Marquette air-entraining cement is added from bags directly into the mixer. A 10-hp. electric motor powers the mixer, which is depressed so that its top is almost level with the floor, to permit easy charging.

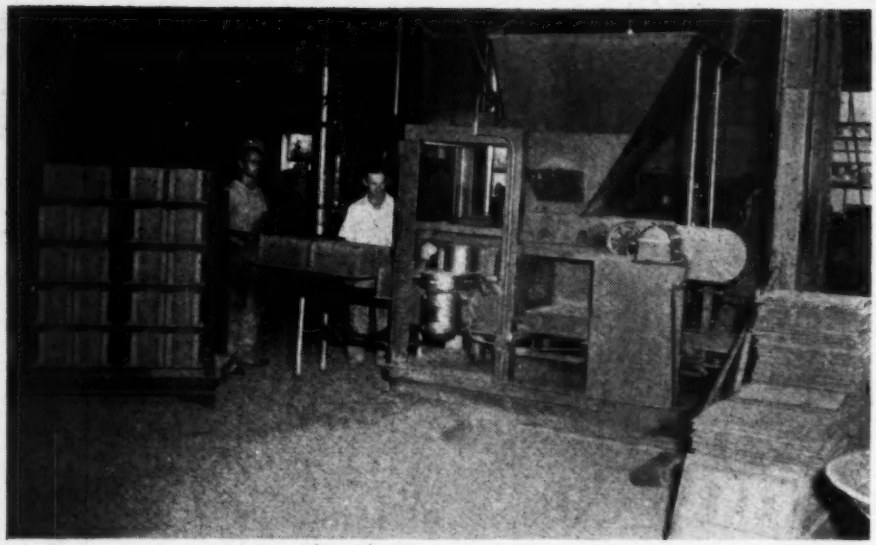
The mixer discharges the concrete into a chute equipped with a Cleveland vibrator to insure complete discharge into the bucket of a Dodson skip hoist. This hoist, powered by a 3-hp. Delco motor, takes the concrete from well below floor level and dumps it into the hopper of the Lith-I-Block machine.

This block machine is an automatic plain pallet vibrating stripper model, which outwardly is almost vibrationless. The major operations of the machine (including the pallet feed) are performed by air-oil cylinders, only the feed agitator drive and the vibrators being operated electrically. Vibration is in a horizontal plane without scouring action, which makes for little wear on cores and mold box liners. This also makes possible the use of plain, unoiled steel pallets, which are fed into the side of the machine.

An integral fluorescent light illuminates the interior of this ma-



• Blocks are taken to the blockyard on a truck and unloaded by hand.



• A side view of the block machine showing the pneumatic offbearer removing two pallets—four blocks—from the machine.

chine, giving the operator a clear view of the mold box. This is an advantage since the operator controls the vibration time by means of a push-button switch on the off-bearer handles. This is the only non-automatic step in the production of the block, as the machine sets its own pace, with one operation following another in sequence. If one operation should fail, the unit automatically stops.

Stripping starts automatically when vibration is stopped, but the stripper head can be held in a raised position for inspection or the removal of foreign matter, or dropped repeatedly when desired by a second push-button switch. This makes it possible to allow for variations in mixes, aggregates, etc., and to bring an off batch down to the required height. A Brunner Mfg. Co. compressor supplies air at 125-150 p.s.i. for both the block machine and pneumatic offbearer. This offbearer consists of twin fork blades which lift two pallets, holding two standard 8- by 8- by 16-in. blocks each, from the machine simultaneously. The offbearing hoist is supported by a pivoted column-and-beam arrangement which is part of the block machine.

• Owner Piskorz stands beside stacks of pallets and the block machine. Note the 18-cu.-ft. mixer (foreground) and the skip hoist at the rear of the block machine.

The welded steel racks were plant-made—co-owner Brunner is a jack-of-many trades—and holds 60 blocks apiece. A Yale "Easy-Lift" hand truck of 3500-lb. capacity hauls the loaded racks to the blockyard for storage.

Blocks are kept in the yard for at least one week before sale. The cost per standard unit to the customer is 19 cents in the yard, or 22 cents delivered. Demand for these light-colored blocks (due to the air-entraining cement, says Mr. Piskorz) is good despite competition.

Three kilns, each to be capable of holding 2,000 blocks in racks, will be erected before cold weather sets in. Doors were placed in the wall of the main structure when it was built, with the idea of making the addition of the 7- by 12½- by 70-ft. kilns as simple as possible. The concrete slab floor for the kilns has already been laid, and is now in use as part of the block yard. An oil-fired boiler will be used to supply steam.

As an additional service to customers, the Fox Lake Concrete Products Corp. sells paint suitable for finishing concrete blocks and products.

Production Line Technique

(*From page* 195)

Day week-end, Noble Co. crews, consisting of a supervisor and four men per batching plant, went to work. Crane men and electricians were furnished by American Pipe & Construction Co. Both batching plants were erected and completely tested, scales were sealed and the plants were ready to go on Monday morning, July 7, at 8 o'clock.

While no great quantity of concrete is needed at any one time in the lining, wrapping and coating operation—usual batch being limited to one cubic yard—the use of two batching plants insures careful weighing and increases efficiency.

The pipe is fabricated in 30-ft. lengths and shipped by rail to the site. There, at the first batching plant, it is lined with portland cement concrete, which is cured under a special sprinkling setup. Next, the pipe is rod wrapped, given additional curing under sprinklers, and passed on to the second batching plant for an outside coating of portland cement concrete.

The batch for the outside coating is mixed rather dry and is applied by brushes revolving at a speed of approximately 6,000 peripheral feet per minute. The brushes do not touch the pipe, but rather splatter the concrete on the rod-wrapped outer surface.

The Second Mokelumne Aqueduct, on which the pipe is being used, is being laid for the East Bay Municipal Utility District to provide more water for the growing communities of Oakland, Berkeley, Alameda, and other cities on the east shore of San Francisco Bay. Charles Bramen is Bay Area construction superintendent, and Herman Jobe is Pittsburg plant superintendent for American Pipe & Construction Co.

Two Ready-Mix Firms Open Plants in Central, West Oregon

Opening of the Bend Ready-Mix Concrete Company's plant at Bend, Oregon, was recently announced by James D. Nelson, manager. The facilities, built at the cost of approximately $60,000, will supply a large part of the concrete needs of users in the Wilamette Valley. Mr. and Mrs. A. Suhre are the owners.

At Springfield, Oregon, the Eugene Sand and Gravel Company has begun producing ready mixed concrete at its new plant. The company, owned by L. H. Williams and E. B. Bishop, recently purchased the Jorgensen Ready-Mix Concrete Company of Eugene, Oregon, and consolidated the two businesses. The owners are now installing a modern plant at Eugene, including a bulk cement plant with a large batcher.

Charles F. Massey, a former official of the Massey Concrete Products Company of Chicago, which he founded, died recently at Miami Beach, Fla.